ECRC ᔆᔆ
Electronic Commerce Resource Center

Instructor Guide

Getting Started With Electronic Commerce

MODULE 1 – Introduction to Electronic Commerce

MODULE 2 – The Internet and the World Wide Web

MODULE 3 – Hardware and Software Requirements

MODULE 4 – Making the Transition

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---------------------------Instructor Guide----------------------------

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Getting Started With Electronic Commerce

MODULE 1 – Introduction to Electronic Commerce

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I.   Student Objectives

Sections I through IX below are the contents of "Mod1studenthandout.doc," which the instructor will provide on diskette to the students at the end of the course. The in-class exercises in Section X are not part of the student handout and must be edited as necessary by the instructor and copied on paper for each student in the class.

- Understand the status of technological development in the world today; how we use it; how it helps people and businesses manage information; the role of computers in our lives; our technological future.

- Gain a basic understanding of electronic commerce, including its parallel evolution with technology in general.

- Become familiar with some of the common terminology associated with ecommerce and computer technology.

- Learn about some of the tools, technologies, and techniques specific to EC and how they can be used to reach company goals, enhance the way business is conducted, and support emerging new technology-based business models.

- Become familiar with some of the "paperless" ways money and information are exchanged electronically.

- Gain a better understanding of the Internet/World Wide Web, including how it can be used to improve a company's marketing, sales, and customer service.

- Learn the importance and applicability of EC to the future success of a business, and also its limitations.

II.   Introduction

This module introduces the concept of Electronic Commerce (EC) and describes some of the electronic tools and technologies available to businesses that can enhance every aspect of buying and selling goods and

services in a global electronic marketplace. The electronic exchange of money and information has been a familiar and common practice in the business world for decades, starting with the simple credit card. Since then, many electronic technologies have been developed and implemented to improve business processes and the bottom line. At the same time, technology has become a familiar part of our everyday lives. It is an indispensable part of the things we encounter every day - everything from cell telephones and satellite television, to cars that provide us with driving directions and the grocery store checkout lane. Conducting business with the help of electronic technologies is nothing new. What *is* new is the convergence of technologies that are becoming more affordable, easy-to-use, and widely accepted by small businesses – technologies that move money, products, and information faster and more efficiently than ever before.

The term "electronic commerce" describes the way business is conducted when companies are able to integrate electronic technologies into their marketing, sales, delivery, and customer service practices. These technologies can provide the edge many companies will need to remain competitive into the future. The challenge for small business today is to become familiar with current and emerging EC tools and techniques, including what they do and how they can be used to a company's best advantage.

III.   What Is Electronic Commerce?

The term "electronic commerce" defies definition, and the U. S. Department of Commerce is the first to agree (see http://www.doc.gov/ecommerce/6.htm). In general, electronic commerce (EC) refers to all forms of individual and organizational commercial transactions based on the processing and transmission of digitized data including text, sound, and visual images. As stated above, EC represents the convergence of affordable, user-friendly business technologies, a transition to a global marketplace, and a wider acceptance of the electronic "paperless" exchange of money and information. One of the most familiar, and powerful, manifestations of the EC phenomenon is the Internet, which is starting to be used by small businesses to attract, inform, receive orders & payment from,

and otherwise serve their customers. Never before have so many customers and merchants been able to instantly communicate with each other. Never before has so much product information been immediately available where and when customers want it. Never before have so many customers had "click-of-a-mouse" purchasing power.

The integration of EC tools and techniques enable small businesses to harness the tremendous power of 1) rapidly advancing computer technologies; 2) the global reach of the Internet; and 3) sophisticated (and affordable) software applications, all having the potential to maintain the bottom line.   EC tools can increase the speed and accuracy of bid solicitations, point-of-sale transactions, production scheduling, invoicing, payments, and many other tasks associated with the buying and selling of goods and services.

The broadening use of standardized EC tools and techniques is generating a common set of protocols for business conducted over the Internet.   This increasing standardization means companies and customers can feel confident that when applying EC technologies, they will be able to consistently communicate and exchange information with customers and other businesses ("speak the same language") well into the future.

Prior to incorporating EC tools and techniques, it is important that a company consider any necessary reengineering and process improvements. The company should be operating as efficiently as possible and should have clearly stated short- and long-term goals. A business should not expect to gain full advantage from the implementation of EC technologies if it hasn't first taken a good, hard look at its overall business model. EC technologies may be used by companies as an add-on or "me-too" strategy, or they can be part of a broader plan to re-engineer and improve processes, and change the way the business is conducted with partners, suppliers, and customers. EC as a concept still has a way to go before it becomes a familiar part of a company's culture. Although Internet-based EC techniques may be a viable way to improve the exchange of information with customers, the greater power of EC is its potential to fundamentally change and improve business processes and models.

According to the third annual CyberShopper Survey (1999), 53 percent of Internet users say they have made online purchases, up from 26 percent in 1997. The same study revealed that concern about using credit cards to make online purchases is about half of the 1997 level. Statistics indicate that "global EC revenues will reach $95 billion in 1999, and will exceed $1.3 trillion by 2003 … as online buyers rely on the Internet for a wider range of goods and services" (ActivMedia Research, 1999). (Additional breaking news and statistics about EC and the Internet is available at **http://www.internetnews.com/**.)

> **Tip for Trainer**
>
> Provide participants with any late-breaking news on this topic.

In addition to the expanded marketing and sales opportunities that EC affords, companies are realizing other direct and indirect benefits such as improved customer service; improved data accuracy; increased financial control; reduced labor processing costs; and decreased administrative costs. Small businesses can now obtain relevant market data, accurate and current statistics, and immediate feedback from suppliers and customers with a speed and efficiency once reserved for large corporations.

IV.   The Big Electronic Picture

The Internet and the World Wide Web

> **Tip for Trainer**
>
> Describe how the Internet has opened the world of communications to businesses and consumers.

The broad and increasing acceptance of EC techniques is largely a result of the explosive growth of the Internet and use of the World Wide Web (the "Web"), a system that facilitates the "browsing" and retrieval of information over the Internet. The Internet was originally conceived as a small group of interconnected computers intended as an inexpensive and reliable means of communication and data exchange among governmental organizations and educational institutions. Today, the Internet is a global network of computers communicating in a common language via telephone, fiber optic, cable, microwave, or satellite connections. It has no centralized distribution point.

> **Tip for Trainer**
>
> More important statistics to provide course participants.

The Internet's complex structure, non-regulated nature, speed, and interconnectivity allow it to support the World Wide Web and a multitude of online discussion groups, bulletin boards, and chat rooms. This global electronic infrastructure is increasing in size and complexity at an incredible rate and is reaching into every corner of the world. For example, the estimated number of Internet users, worldwide, at the end of 1998 was close

to 150 million (NUA Internet Surveys, Ltd., http://www.nua.ie/surveys/about/index.html). The number of Internet users at the end of 1999 could well exceed 200 million worldwide. *Every hour*, 760 households obtain Internet access (The Industry Standard, March 29, 1999, citing Nielsen Media Research). According to Forrester Research, over 2 billion orders for products and services will have been placed over the Internet in 1999.   According to IDC Research, the number of people using the Internet to procure products and services is expected to increase from 600,000 in 1999 to at least 250 million in 2003. In addition, the same source projects that by 2003, Internet-based procurement, proven significantly cost-effective for the consumer, will save purchasers over a billion dollars on transactions totaling close to 1.4 trillion. (More Internet statistics are available at http://www.headcount.com).

The Global Information Infrastructure

The Global Information Infrastructure (GII) refers to the worldwide system of high-speed communications networks, computers, databanks, and consumer electronics that make vast amounts of information available to users. The GII encompasses a wide range of equipment, including cameras, scanners, keyboards, facsimile machines, telephones, computers, switches, compact disks, video and audio tape, cable, wire, satellites, fiber-optic transmission lines, speakers, networks of all types, televisions, monitors, printers, and much more.   Combine the GII with the enormous amount of electronic information to which is has access (e.g., documents, files, faxes, graphics, text, audio, video, animations, e-mail, news), and you have what is loosely referred to as the "Information Superhighway." The Internet is fulfilling the vision of the Information Superhighway as it reaches into every community to connect computers, people, and information.

Private industry will continue to play a vital role in the future development of the GII/Internet, including how it will be used to enhance profitability and competitiveness in the global marketplace. Private industry will build and mange the networks, be responsible for much of the information that moves over the networks, and continue to develop future generations of information management tools.

V.   EC Tools and Techniques

As mentioned above, maintaining competitiveness through the use of electronic technologies is not really a new concept. Most small businesses are familiar with the usefulness and necessity of fax machines, computers, e-mail, and Internet access. However, today's vision of electronic commerce requires small businesses to consider: 1) adopting EC technologies previously available only to large corporations; 2) using the Internet to market and sell goods and services to customers; 3) learning ways to make the more familiar technologies work harder and smarter; and 4) fundamentally rethinking the way they want to do business. Below is a listing of technologies, tools, and techniques that can help companies compete and succeed in an electronic marketplace.

Bar Coding

Tip for Trainer

Share with the participants that bar coding is a relatively inexpensive way for a small business to manage inventory. Also, consider mentioning that our BPI 124, Bar Coding, is available for anyone interested in more information on the subject.

A bar code is a pattern of colored lines of various width separated by white spaces, also of varying width. The pattern is read with a special optical scanner that can transfer the information contained in the bar code to a computer. The most common type of bar code used in the business sector is the Universal Product Code (UPC), present on most general merchandise. Bar coding allows individual items to be uniquely identified, accurately tracked, and automatically inventoried. Bar coding is fast becoming a requirement for the delivery of merchandise to many purchasers, including governments and military installations. Bar coding is also spreading into other uses that require high speed or that deal with large inventories. For businesses, bar code systems can save time, increase productivity, improve product quality, reduce paper documentation, improve reporting accuracy, and minimize inventory overhead. Bar coding also provides a secure, digital recordkeeping system that tracks and stores information about products and processes, and can be easily accessed and transmitted electronically.

Debit Cards

Q & A

Why are debit cards are an ideal way to conduct business electronically?

A debit card resembles a plastic credit card with a magnetic strip and automatically debits the purchaser's checking account when it is used to make a purchase. The cash is immediately transferred to the merchant's business account. A debit card is usually machine readable, allowing for

electronic payment through the activation of an automated teller machine (ATM) or other automated payment device or "card reader" when used in conjunction with a 4-digit personal identification number (PIN).

Debit cards have become one of the most popular methods of payment. Almost anyone who has a checking account has a debit card. It is reported that 3 trillion debit card transactions took place in 1998. Debit cards are a fast and safe payment alternative for customers and merchants alike. Accepting debit card payment from customers in the store or over the Internet, can increase a company's sales volume, lower handling costs associated with other payment methods, and provide an edge over competitors who do not accept debit card payment.

Electronic Catalogs

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Q & A

What are the benefits of electronic catalogs?

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A catalog can be defined as "a description of items arranged systematically with visual details." When item information is listed in an electronic medium, i.e., on a compact disc (CD) or on a Web page, it becomes an electronic catalog. Immediate cost savings are realized because electronic catalogs do not have to be printed and shipped to customers. The shipping of an electronic catalog in CD format can be very cost-effective when compared to the publication and distribution of a larger and heavier paper catalog. Posting catalogs on the Internet brings additional benefits.   All current and prospective customers can access the catalog immediately from their home or office, and product/pricing information can be updated instantly.   It is important to note that many purchasers and contracting agencies today will order only those goods and services cataloged in an electronic format.

Electronic Data Interchange

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Tip for Trainer

True EDI requires the use of the following components: transaction sets, VAN technology, trading partner profiles/agreements, and EDI software.

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Electronic Data Interchange (EDI) is a way to routinely transfer large amounts of data from one business partner to another. EDI is a computer-to-computer exchange of specially-coded data that is effectively "lifted" from a template, document, or database at the sender's end, and then "dropped" into a similarly formatted template, document, or database at the recipient's end. To make use of EDI, two or more companies enter into a formal "trading partner" agreement to exchange data. The exchanges occur in accordance with industry-specific data formatting protocols, called "transaction sets," agreed upon by the trading partners.   For example, companies wanting to do

business with the Department of Defense (DoD) must first establish EDI capability, and then must begin to manage their own data so that electronic exchanges with DoD conform to agreed-upon transaction sets. Currently, most federal agencies, and many other private firms, require their vendors to have EDI capability.

In theory, trading partners can perform EDI directly, from one computer linked directly to another. In practice, EDI is more easily accomplished using an intermediary, or third party, called a Value Added Network (VAN). The VAN serves as an electronic clearinghouse, routing packages of data between trading partners and holding data sets in transit until the recipient is ready to receive them.

Electronic Funds Transfer

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Q & A

How is EFT related to EDI?

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Electronic funds transfer (EFT) is the electronic collection of purchaser payments and remittances, as opposed to the submittal of invoices and receipt of paper checks. EFT offers a fast, reliable, and secure way for businesses to receive payment from customers. Increasingly, customers cannot procure services without agreeing to make payments through EFT. EFT is also the mechanism behind other funds transfer conveniences such as direct payroll deposit, automated teller machines, point-of-sale debit card transactions, and credit card transactions. We are all familiar with the automatic payment we agree to have debited to our bank accounts or credit cards when we sign up for an AOL account or become a member of a health club.

Electronic Mail

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Q & A

What is the current ratio of email sent when compared to regular mail?

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Electronic mail (e-mail) is the fastest growing form of interpersonal communication today. According to Jupiter Communications, the volume of e-mail messages transmitted in 1998 was 250 million *per day* (by 77 million users). It is estimated that this figure will be close to 600 million per day in 2002 (131 million users). E-mail technology allows a computer user to transmit messages to, and receive messages from, another computer user. The other user may be an employee of the same business on the same computer network, or a person on a remote computer network connected by a telecommunications link. Each e-mail user on the planet has their own unique e-mail "address," usually consisting of their "username" followed by

the "@" symbol and the name of the host computer where the user's e-mail will be received – for example: *jsmith@business.com*. The host computer acts as a mailbox and accumulates e-mail messages until the recipient retrieves them. E-mail capability is readily obtained by any person or business from an Internet service provider (ISP). Some service providers require the user to install a special e-mail software application, many of which are free or packaged with computer operating systems.

E-mail has become an indispensable tool in today' business environment. It is estimated that 80% of all e-mail accounts are assigned to business enterprises. E-mail software programs enable the creation of distribution lists that, in turn, allow a single e-mail message to be delivered simultaneously to multiple recipients. This capability makes e-mail a powerful direct marketing tool. Furthermore, e-mail capability is available at a fraction of the cost of traditional direct mail methods and it's use as a cost-effective marketing tool is expected to grow significantly.

In contrast to obtaining e-mail services from an ISP, any user with access to the Internet can choose from a number of free Web-based e-mail services (http://www.hotmail.com, http://edit.yahoo.com/config). With this method, the user must visit a particular Web site before they can send or retrieve e-mail. The free Web-based services are not yet able to offer the scope of customized business services and the degree of security that a local ISP can provide; therefore, it is recommended that companies choose their e-mail services with care.

Facsimile Technology

Facsimile (fax) technology encodes and transmits a signal representing an "image" of a document (rather than the digital form of the document itself) over a telephone connection. The imaged document can have any visual content, including text, graphics, handwriting, or photos. Facsimile options include the traditional "fax machine," which automatically prints the received image on paper, or the "fax modem," an integral part of a desktop computer. Using specialized software, a fax modem can encode and transmit an image of a document without having to scan the document itself, thereby saving a step and a piece of paper. A fax modem can also encode and transmit an image of the digitized file created by a scanner. Images encoded and

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Tip for Trainer

Emphasize that a company should consider using a listserv or mailing lists when sending out a large number of emails.

Tip for Trainer

Although one of the older technologies, it is still being used heavily in today's business world.

transmitted by a fax machine or fax modem image can be viewed on-screen or printed by the recipient. However, facsimile images cannot be edited like a text document since they are just a "picture" of the text. A facsimile transmission can also be delivered to multiple recipients simultaneously.

Purchase Cards

Tip for Trainer

Purchase cards have become a vital part of the federal government's transition to electronic commerce.

"Purchase cards" are the federal government's version of the traditional credit card. In fiscal year 1998, the federal government bought more than $5 billion in goods and services using purchase cards. The federal government must use purchase cards for all purchases valued at less that $2,500 ("micro-purchases"). According to the Department of Defense (DoD), purchase cards are now accepted by more than 14 million vendors and can be used for purchases from electronic catalogs and electronic malls (E-Malls). Purchase cards allow the vendor to receive payment from the government more quickly than with traditional paper-based billing and payment methods. The purchase card is convenient for its holder because, like a credit card, it requires only one monthly payment to a single banking institution, thereby reducing the paperwork involved in paying multiple vendors. Furthermore, the purchaser can take possession of goods and services without waiting for a check to clear. Market researcher Dataquest forecasts that by the year 2001, 3.4 billion credit and/or purchase cards will be in use worldwide.

Smart Cards

Tip for Trainer

This technology is destined to replace a lot of paper-based communications as well as financial transactions.

Smart cards, also referred to as "chip cards" or "memory cards," are plastic cards similar in appearance to credit cards that are embedded with a small microprocessor. Smart cards can store information about the holder, include security features, and provide computational capability. Using a card reading device, funds are transferred from the smart card directly into a vendor's account at the time of purchase. The smart card keeps track of debits made to the balance programmed into the imbedded chip. When the balance is depleted, the card's microchip can be reprogrammed with another allotment of funds from the cardholder's account. In the future, smart card technology may also support personal identification, financial services, health care, transportation, vending (cash substitute in person or over the Internet), and other uses. Another future development is likely to be a hybrid smart card containing not only an embedded microprocessor memory module, but also

bar coding and magnetic strips. With this technology mix, a single card can access different hardware systems such as card readers, bar code readers, and automatic teller machines (ATM's).

Electronic Malls

Tip for Trainer

Electronic malls are being used more and more by both government and business entities in an attempt to provide shoppers better access to a variety of goods and services. The jury is still out on how effective they are.

An electronic mall (E-Mall) is a Web site organized in the tradition of a shopping mall, where a shopper can browse through a selection of online "stores" in search of desired products and services. E-Malls generally target a particular group of customers. Generally, E-Malls offer shoppers easy access to supplier information, including the ability to search one or more online catalogs for specific information about products, features, and prices. The shopper can also link directly to the supplier's own Web site, where quotes can be requested, orders placed, and payments submitted. A good example of an electronic mall is the Department of Defense Electronic Mall (DoD E-Mall), a single point of entry for the government shopper to search, find, compare, and order goods and services, as well as inquire about the status of an order. An example of a vendor Web site linked to the DoD E-Mall site is the H. Wilson Company (http://hwilson.com), which includes an online catalog, photo archive, information about purchasing & shipping, special sales, and how to order a paper catalog. E-Malls have been created by and for other federal agencies, including the National Institutes of Health and NASA. (More information about the DoD E-Mall is available at http://www.ecrc.uofs.edu/dla-emall/index.html.)

E-Mall architecture may be completely centralized, with all information stored on a central database maintained by the "manager" of the E-Mall. However, the current trend is toward a "distributed" architecture where vendor information and electronic catalogs, though presented as though they all reside in a central location, are physically located on different computer databases maintained by the vendors. In many cases, the management of a government E-Mall is outsourced. E-Malls are increasing in popularity with shoppers because they are easy to use and enable quick comparisons between a host of different product features and prices from different vendors. In addition, they generally offer very competitive pricing and online payment options.

On-line Retailing

The average consumer is becoming more comfortable with the idea of transmitting personal information, like credit card numbers, over the Internet, and consequently, the number of online shoppers is skyrocketing. Everything from books, clothing, and furniture to consulting services and private jets can be purchased from online retailers on the Internet. In addition, the cost for a small business to establish an online retail presence has decreased significantly. On-line retailing removes the traditional boundaries of business. In the virtual world of the Web, small businesses now have the opportunity to successfully compete with large businesses. In addition to using the Internet to make online purchases, visitors to a retail Web site may prefer to review posted product information in preparation for a visit to the company's "brick and mortar" site.

VI.   Summary

This module has introduced the concept of electronic commerce (EC) and some of the available EC tools and techniques that can help a business cost-effectively maintain their competitiveness and profitability in the global marketplace. The following modules will provide more detailed discussion of: 1) the power and inner workings of Internet and World Wide Web; 2) the hardware and software components that support EC; and 3) and how to put it all together and incorporate EC tools into daily business practices.

VII.   In-class Exercise

Anticipated Outcome of the Exercise

This discussion should result in a familiarity with the basics of electronic commerce, including the types and selection of EC technologies with the potential to enhance business processes, customer service, and profitability.

Instructor Suggestions

Break the class up into small groups (3-4 per group). Each group designates a facilitator/spokesperson responsible for recording the group's responses to the exercise questions and presenting them to the class. The instructor should listen to

the progression of the discussions in each group, but not offer suggestions or direction. Make a note of how the overheard discussions reflect on assimilation of the day's course material. Remember, there are no right or wrong answers. Listen for new ideas and solutions you may not have heard before, and make a note for future reference and/or course material.

Time Allowance

15 to 20 minutes. Depending on size of class and time frame, each group shares the results of their discussions with the class and the reasoning behind their thoughts. The instructor offers positive feedback and/or suggestions to the presenter's group. If only a few selected groups present to the class, instructor should encourage comments from non-presenting members of the class.

Other Comments

There are no right or wrong answers in this exercise. Participants can also suggest other technologies that are not listed.

Scenario:

Turnkey Imports (TI) is a small importer and distributor. The company is currently profitable and efficiently operated, but has set a goal to increase its market share in order to remain competitive into the future. TI has chosen to explore the use of EC and Internet-based technologies to attract and better serve customers. TI's immediate objective is to make an electronic catalog of its products available to current and prospective customers. TI has also chosen to incorporate electronic ordering and payment capability for the convenience of customers and business partners, but is not sure when it will be ready to fully implement these types of technologies. The two computers in use at TI are each less than one-year-old.

Questions:

Based on the above scenario, and considering the information presented in class during this module, which of the EC tools and technologies listed below might TI consider when developing an electronic catalog?

√	EC Tools and Technologies	Remarks
	The Internet	
	The World Wide Web	
	Bar coding	
	Debit Cards	
	Electronic Catalogs	
	Electronic Data Interchange (EDI)	
	Electronic Mail	
	Facsimile	
	Purchase Cards	
	Smart Cards	
	E-Malls	
	Internet Retailing	

1. Of the EC technologies considered, which one(s) would best allow TI to reach its stated business goals/objectives, and why?

2. Describe any possible limitations of the selected technologies.

3. What will the incorporation of EC technologies allow TI's customers to do? To do better?

4. Through the incorporation of EC technologies:

   (a) What kind of electronic information will be available to TI's customers? How will customers find only the information they need?

   (b) What new communication methods would be available to link TI and its customers to each other?

   (c) How might TI's operations, processes, and/or profitability be enhanced?

5. How might the TI customer's general shopping and purchasing experience be improved?

VIII. Homework Exercises

Scenario:

Your company is efficiently operated and currently profitable, but you have set a new goal to increase your market share in order to remain competitive into the future. You have chosen to explore the use of electronic commerce and Internet-based technologies to attract, supply, and better serve customers. Your immediate objective is to develop an electronic catalog of your products/services and make it easily available to current and prospective customers. You have also chosen to eventually incorporate online ordering and payment features for the convenience of customers and business partners, but you are not sure when your company will be ready to fully implement these services. Assume the computers in use at your

company are each less than one-year-old (i.e., lack of computer power and basic PC components is not a concern).

Questions:

Based on the above scenario and considering the information presented in class during this module, which of the EC tools and technologies listed below might you consider when developing an electronic catalog? (See table below.)

√	EC Tools and Technologies	Remarks
	The Internet	
	The World Wide Web	
	Bar coding	
	Debit Cards	
	Electronic Catalogs	
	Electronic Data Interchange (EDI)	
	Electronic Mail	
	Facsimile	
	Purchase Cards	
	Smart Cards	
	E-Malls	
	Internet Retailing	

1.   Of the EC technologies you have elected to consider, which one(s) would best allow your company to reach its stated business goals and objectives, and why?

2. Describe any possible limitations of the selected technologies.

3. What will the incorporation of EC technologies allow your customers to do? To do better?

4. Through the incorporation of EC technologies:

   (a) What previously unavailable information will be available to your customers? How will your customers find the information they need?

   (b) What new communication methods would be available to link your company with customers?

   (c) How might your business operations, processes, and/or profitability be changed and/or enhanced?

5. How might your customers' general shopping and purchasing experience be improved?

Getting Started With Electronic Commerce

MODULE 2 – The Internet and the World Wide Web

I.   Student Objectives

II. Introduction

III. Background

IV. Important Terms

   a)   Uniform Resource Locator (URL)

   b)   Domain Name

   c)   Internet Protocol (IP) Address

   d)   Hypertext Markup Language (HTML)

V.   Accessing the Internet

VI. Hardware Requirements

VII. Electronic Mail

   a)   Internet-based E-mail

   b)   Web-based E-mail

VIII. The Browser

   a)   Cookies

   b)   Plug-ins

   c)   Cache & Temp Files

IX. Searching for Information on the Internet

   a)   Search Engines

   b)   Search Methods

X.   Summary

XI. Homework Exercises

XII. Resources

I.　Student Objectives

Given the real world circumstances at a company, a real or sample topic requiring research (e.g., free technical training opportunities), and the search engine guidelines provided, perform a pre-search analysis designed to retrieve a manageable amount of relevant information from the Internet

II.　Introduction

When businesses and individuals are asked for their mailing address or business location, it generally used to be a request for a house number, street name, driving directions, etc. Today, such a request is just as likely to elicit an electronic mail (e-mail) address or Web site address. Increasingly, e-mail is the preferred means for business and personal communications - often faster and more reliable than using the telephone. In addition, "something-dot-com" Web site addresses are seen everywhere, from business cards and magazine advertisements to television commercials and highway billboards.

The Internet, including the World Wide Web (WWW), has become an indispensable and familiar communications tool for millions of individuals, organizations, and businesses around the globe. Despite these seemingly impressive statistics, there are still hundreds of millions who do not have Internet access, are unsure just how to "get online," and who have yet to fully grasp the power of the Internet and the WWW.

This module will provide a more in-depth discussion of the Internet and the WWW, including some history, as well as how to access the Internet and use e-mail, Web browsers, and search engines.

III.　Background

The Internet came into existence in the 1960s as part of a Department of Defense initiative to develop a way to transmit, via a telephone connection between two computers, large amounts of data between various governmental agencies and academic institutions. The Internet has since

grown into a vast global network of electronic components that includes thousands of smaller computer networks and millions of computers. Each computer on this "network of networks" is connected to every other (theoretically) via a system of telephone lines and other electronic data transmission methods. All of these computers are able to speak a similar electronic language to each other and, therefore, can exchange large amounts of information easily, accurately, and at tremendous speeds.

The World Wide Web or "Web" is the common term for a graphical, interactive information exchange system supported by the electronic framework of the Internet. The Web allows users, using Web browser software, to search for, access, display, and download a worldwide collection of textual, graphical, audio, and video files residing on servers. A server is a computer system that stores, retrieves, and transfers ("serves") a variety of files, data, and services when requested by another computer system (the "client"). (A Web browser application such as Netscape would be a type of client.) The documents, commonly formatted using hypertext markup language (HTML), are read and displayed on-screen by the user's Web browser program. These HTML documents may be interconnected by hyperlinks, which allow the client/user to page through or "surf" from document to document, or from Web site to Web site, with the click of a mouse.

Tip for Trainer

Emphasize that the Web is the High Occupancy Vehicle   (HOV) Lane of the Information Superhighway.

IV.   Important Terms

Uniform Resource Locator (URL)

A uniform resource locator (URL) is the standard way an Internet resource is identified so that it can be located and requested by a Web browser. The URL specifies the communications protocol to be used to access the resource (http, ftp, telnet), the name of the server on which the resource resides (closely related to the "domain name" defined below), and the path or file name of the specific resource stored on the server. When no path or file name is specified in a URL, the server usually allows automatic access to a default or index file. This is how most "home pages" are called up by a Web browser after entering a domain name. Http refers to hypertext transfer protocol; a communication standard used by the Web to transfer HTML documents and related information. Ftp refers to a protocol that allows the

manipulation and copying of files to and from a remote computer ("uploading" and "downloading"). Telnet is a protocol that allows a user to establish a dial-up connection to a remote computer or server and use its applications as though directly connected to it. Examples of URLs are listed below:

http://www.matisse.net/seminars.html   - "www.matisse.net" identifies the server and "seminars.html" identifies a particular file or Web page stored on the server.   (Remember, the geographic location of any server is usually unknown to the user or the client, and it doesn't it really matter. A URL identifying a particular server may in fact allow access to resources located on any number of different computers in different locations.)

http://its.foxvalley.tec.wi.us – "its.foxvalley.wi.us" identifies the server and the "wi.us" part of the URL means it is a U.S. government server located in Wisconsin, probably at a university.

Domain Name

On the Web, the domain name is that part of the Uniform Resource Locator or URL that tells the server where to forward a request for a Web page. The domain name is mapped to an Internet Protocol (IP) address representing a physical point (server) on the Internet. More than one domain name can be mapped to the same IP address. This allows multiple individuals, businesses, and organizations to have separate Internet identities while sharing the same Internet server. Domain names always have two or more parts separated by dots.   For   example,   the   domain   names   "business.com"   and "news.business.com" (part of the URLs http://www.business.com and http://www.news.business.com) point to only one machine. It is also possible for a domain name to exist but not point to an actual machine.

Internet Protocol (IP) Address

The IP address of a particular computer or server on a Transmission Control Protocol/Internet Protocol (TCP/IP) network is written as four groups of numbers (each group may consist of as many as three numbers each) separated by periods. An example of an IP address is 119.183.115.11.

Hypertext Markup Language (HTML)

Hypertext Markup Language - the standard language used for creating and formatting World Wide Web pages. HTML documents are essentially text documents, similar to those created in a word processing program. HTML documents can also contain graphics, sound, video, and hyperlinks (text that when clicked on, takes the user to another HTML document).   HTML documents include special codes called tags that tell Internet browsers how to present the page on the computer screen and where hyperlinks links lead.

Tip for Trainer

Emphasize that HTML is the basic coding language used to create Web pages. It is platform independent (can be viewed on any make or model computer with a browser). It is also an excellent means of sharing documents offline.

V.   Accessing the Internet

After deciding to explore Internet, the next step is to connect. The typical user connects, usually through a telephone line, using an (ISP) such as AmericaOnLine (AOL) or a local ISP, which is usually the same entity that provides the user with regular telephone service, or another local dial-up service.   In either case, the service provider provides Internet browser software to the user. Internet service providers charge a monthly fee, usually to the user's credit card or phone bill. Internet access that includes an unlimited number of online hours generally costs about $10-$20 per month.

Tip for Trainer

This is also a good time to talk specifically about WebTV, explained in more detail in Module 3.

The speed at which data is transmitted to and from the user's computer is a function of the user's modem speed and the speed of the ISP's modem (more on hardware below).   The faster the connection speed, measured in kilobits per second (Kbps), the faster Web pages and images will load. Today, most home-based modems are in the 28.8-56 Kbps range and most ISPs offer speeds of 56Kbps or greater.   Increasingly, businesses, individuals, and ISPs are taking advantage of newer, faster connections, including Integrated Services Digital Network (ISDN), and WebTV.

VI.   Hardware Requirements

Accessing the Internet requires, at a minimum, a basic personal computer (PC) system with a Pentium-class processor and modem, and a monitor. Most computers come equipped with software that makes it simple to establish an Internet connection, usually through a telephone line. Installing a second telephone line dedicated to Internet access will allow the user to make and receive calls while on line.   Although the technology is now

available, for most users, one telephone line cannot carry and Internet connection and a telephone call at the same time.

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VII.   Electronic Mail

</div>

Internet-Based E-mail

Internet-based e-mail messages are sent and received by way of the user's Internet Service Provider. E-mail is fast, private, cheap, and convenient. Internet-based e-mail can be sent and received only when using a computer connected to the user's ISP account via a telephone line. The ISP requires a userID and password when the Internet access account is set up. E-mail software must be loaded on the user's computer; however, e-mail programs are available at little or no cost from a variety of sources, including the Internet. Event the simplest e-mail software programs allow users to write, send, include attachments, open, read, forward, reply to, save, and otherwise manage mail.

Web-Based E-mail

Tip for Trainer

Having Web-based email is an excellent alternative to Internet-based email because it can be accessed anywhere from any computer connected to the Internet. Demonstrate how easy it is to resister online for Web-based email.

Web-based e-mail is a little different and is offered free by a variety of Internet-based providers. Users register a userID and password at the provider's Web site, after which they can send and receive Internet mail *only* by visiting the same Web site. The user has their own password and mailbox, but may not have a lot of choice about their userID, which may be automatically assigned when they register. However, the great advantage to Web-based e-mail is that it can be accessed when travelling with any computer connected to the Internet. Users also can obtain more than one e-mail address and switch among free e-mail service providers at any time. The disadvantage is that the user may have to wade through a lot of advertising at the provider's Web site when they log on to send and receive mail.

Tip for Trainer

A Web browser is the essential ingredient for accessing the Internet. The browser can also be used to display HTML documents offline.

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VIII.   The Browser

</div>

The Web is part of the globally interconnected collection of servers and networks that make up the Internet. The graphical user interface that allows users to view and interact with HTML documents residing on the Internet is

provided by browser software. The browser, such as Netscape or Microsoft Internet Explorer, can retrieve and display Web pages when the user types in a specific URL or clicks on a Web page hyperlink. Browsers are tools that help users access and navigate the Web. A browser can search for Web sites containing certain key words and keep track of sites that have been visited so they can be quickly accessed later. In addition to accessing Web sites, a browser can allow the printing and storage of entire Web pages, send and receive electronic mail, and customize the way Web documents are viewed and managed.

Cookies

A cookie is a file sent to and stored on a user's computer when a particular Web site is visited. The server hosting the visited Web site places the cookie on the user's fixed, or hard, drive. After a server places a cookie on the user's computer, each subsequent request by the user for a Web page from that server will contain the cookie. Cookies allow servers to recognize and track users when they revisit Web sites residing on that server.

Plug-Ins

Plug-ins are small software programs that "plug-in" and expand the features of primary software applications. They can also add multimedia capabilities to a Web browser.

Cache & Temp Files

When using the popular Web browser programs, copies of visited Web sites are stored by the browser in a special file folder on the computer. Having these files handy means that as Web sites are navigated and the same Web page is visited again and again, the browser will load the copy of the stored file rather than requesting it from the remote Web server each time. However, cache or temp file folders can fill with many hundreds of files and slow down the computer's speed. For this reason, all files in the cache or temp folders should be deleted periodically.

IX.   Searching For Information on the Internet

Search Engines

A search engine is a computer application residing on a remote server and accessed by the user through a Web site. A search engine can be instructed to search the World Wide Web and identify/retrieve information and URLs in response to a set of user-specified search criteria, or "query." Search engines build, manage, and routinely update massive databases and/or directories of URLs, including brief descriptions, for a variety of Internet-based information, including Web sites, Gopher menus, newsgroups, and FTP archives. Thus, when the user executes a search, they are not really searching the Web in real time, which would not be possible, but are searching a constantly updated database or directory of URLs maintained by the search engine. Search engines generally update and add to their databases through the use of a simple program called a "spider" that constantly scans the Web, crawling from link to link in search of new sites and new information.

A search engine generally organizes the information in its database into a hierarchy of categories and subjects beginning with general headings broken down into increasingly specific subheadings. Information is also indexed based on common keywords. In response to the user's search query, the search engine identifies Web sites containing similar subject matter and/or matching keywords and usually ranks them in order of how closely they match. Depending on the search criteria specified by the user, a search engine can identify many thousands of matching sites or "hits," or may find only a few. Some "multiengine" search engines search the databases of several other search engines at the same time! Using a search engine to find only the desired information and exclude unwanted information takes practice. For links to a variety of search engines, directories, and related sites to help locate people, places, and information in the Web, visit www.hotsheet.com or www.searchgateway.com.

Search Methods

Search engines are becoming increasingly similar in the features they offer and in the way they search for information. Many search engines are now

> **Tip for Trainer**
>
> It is important to use a search engine that can find the information you need. The best search engine is the one that the user is confident using.

referred to as "portals," which are collections of links, content, and services designed to guide users to information they are likely to find interesting – news, weather, entertainment, commerce sites, chat rooms, and so on. However, there are some differences among search engines that dictate the way a query should be executed. Most search engines provide online guidance to help users formulate queries and locate information. Some of the more common search methods and query techniques are discussed below.

- Keyword Queries

The simplest and most common search method is to execute a *keyword* query. In response, the search engine will compare the keyword(s) against its keyword indices and return sites that contain the keyword, and sometimes variations on a keyword. The returned list is generally ranked based on keyword(s) frequency in the content.

- Conceptual Queries

Conceptual search methods try to determine what is *meant* by a user's search query. For example, some search engines allow you to execute a query by phrasing it as a question. Ideally, a concept-based search returns information relevant to the query, even if the content does not match the exact words used. An example of a search engine that uses the conceptual search method is "Ask Jeeves."

- Search Operators

Because search engine queries typically return either too many or too few relevant hits, it is often helpful to refine queries using search operators. Search operators are instructions (usually simple words or symbols) that specify how a search will be conducted. Frequently used search operators, called Boolean operators, are the words AND, OR, and NOT. These words, which must be capitalized, connect search keywords and phrases in a query statement.   For   example,   the   search   phrase "horsesANDdonkeysORzebrasANDNOTmules" will find sites that *all* have horses, that also *all* have either donkeys or zebras, and that *all* contain no mules.   Using Boolean operators can help users specifically exclude or include information when searching.   The results of a search may be

searched again, or "refined," using Boolean operators to narrow the focus of the search and produce a manageable number of high-quality matches.

- Search Hints

➢ A multi-engine search tool such as MetaCrawler is very efficient and will return fewer but more hits that are relevant.

➢ A search query can be limited by using quotation marks around keywords to create a phrase. For example, a keyword search containing the words major, league, and pitcher will return hits containing one, two, or all of these words. If the query is executed with the phrase "major league pitcher," only documents containing the exact phrase will be returned. If the phrase was entered as majorANDleagueANDpitcher, only documents containing all of these words would be returned; however, not necessarily as a phrase.

➢ Speed up a search by creating a separate text document where relevant hits that appear during a search can be copied and pasted for later reading. Be sure to save the site name and URL so it can be visited later.

➢ It is not a good idea to bookmark the Web page listing sites returned during a search. This will add clutter and take up hard drive space. In addition, reopening the page for later review means that all of the listed information will have to be scanned. It is better to use the copy and paste method above or open sites that appear relevant and bookmark just the one site. It will take less time later to view a single document.

➢ Use a variety of search engines and search techniques to ensure that a good crop of relevant hits will be harvested.

X.   Summary

The Internet is probably your best source for information on any subject. It is also a source of a variety free services useful to business, including e-mail, e-commerce, Web sites, software, and many other no-cost and low-cost services. However, it is important to remember that information gathered on the Internet is not necessarily the highest quality information, and free

services are not always the simplest or most effective solution to a business problem. This message contained in this module is that the Internet is an extremely useful and powerful tool for business that must be used carefully to ensure the highest quality information is found with minimal effort. Users will be well served if they take time to develop their Internet browsing and searching skills, as well as an analytical eye toward the vast and overwhelming quantity of Internet-based information available to any user, anywhere, anytime.

In-class Exercise #1

Using Web-based Email

- Exercise Objective:

Learn about some of the free Web-based email service providers, including how differences between their key attributes might make one more suitable than another for business use, based on scenarios describing the specific messaging needs of a company and its employees.

- Scenario #1

Instructions:

Given the written scenario and tabulated information presented below, select an appropriate Web-based email service provider for a company called ABC. Document the reasoning behind the decision and be prepared to discuss. There are no right or wrong answers.

Scenario:

The ABC Company has 10 employees who travel frequently. In the past, traveling ABC employees have relied primarily on the Plain Old Telephone System (POTS) to communicate with the main office. They are able to exchange email through the main office's Local Area Network (LAN); however, this messaging capability is available to employees only when they are at the office. All of ABC's employees have access to the Internet from their desktop PCs and have access to modem-equipped laptop computers for travel.

ABC's CEO has been concerned about the number of important telephone calls missed by employees when on the road. She realized that ABC would benefit if new ways of improving communications could be found at minimal or no cost. Fortunately, the ABC Office Manager was a seasoned user of the Internet and informed the CEO that free Web-based email accounts were available to anyone with access to a computer connected to the Internet, anywhere in the world. This technology could provide the communication improvements they sought. Employees on the road could communicate with customers and fellow workers via email when it is not possible to connect by telephone. The Office Manager added that there were hundreds of Web-based email providers from which to choose.

After evaluating a number of free email providers, a list of five with similar basic features was drawn up. Now, the CEO has asked you to make the final selection of the email provider that AFB will use. After conducting some research on the Internet and taking note of the attitudes of some of ABC's employees, you have developed the table of information below. Based on the available information presented below, choose an email service for the ABC Company and be prepared to discuss the reasoning behind the decision.

Email Service Features	Company Perspectives by Feature	Hotmail www.msn.com	iName www.iname.com	Juno www.juno.com	Net@ddress Www.netaddress.com	MyYahoo! edit.yahoo.com
Multiple Entry Point Availability (Other Web sites where the email service is available)	This really does not matter to CEO; however, she does favor multiple entry points.	None	www.geocities.com www.infospace.com www.lycos.com www.netscape.com www.pathfinder.com www.switchboard.com	None	None	www.rocketmail.com
Account Setup	Sales people for Company ABC are very good at what they do, however, when it comes to computers they need something simple	The questionnaire is reasonably simple. No telephone number is requested.	The questionnaire asks for your telephone number but does not inflict a marketing survey on you.	The setup is reasonably easy and automated, but for our ISDN modem, we had to set up manually.	Up to six people can be notified automatically of your new address. The marketing questionnaire is brief, but you have to give an address.	The questionnaire is very simple, with a marketing survey you can ignore.
User Interface	ABC sales staff is very impatient, and sometimes they need access quickly.	Rich in information (such as breaking news) but cluttered and graphics-heavy, which slows loading. The message list doesn't indicate which messages have attachments.	Graphics-heavy and somewhat slow but easy to navigate.	Simple and clear.	Uncluttered design, with informative message lists that indicate whether a message has been read and whether it has attachments.	Elegant, uncluttered, informative, and ad-free.
Message Creation and Receipt	The CEO and Sales Staff need to attach files to their email. Remember the staff is interesting in something simple. Four members have stated that they are not great spellers.	Well-designed editor, with a spell-checker, a thesaurus, and an option to save a draft without sending. It supports blind copies. All sent messages have an ad for Hotmail at the end.	Simple and straightforward, with an address-book feature and file attachment, but this is the only service that does not display the text of HTML-formatted mail.	Basic features, plus spell-checking and an address book. You can't attach files to outgoing messages. You need to find your own separate decoding utility to deal with incoming attachments. A three-line ad appears at the end of every sent message.	The service supports HTML-formatted e-mail. An option lets you display in-line graphics or show them as icons that you have to click to view. All sent messages have an ad for Net@ddress at the end.	The service supports HTML-formatted e-mail and displays in-line graphics. The address book is easy to manage. You can save drafts before sending. All sent messages have an ad for Yahoo! Mail at the end.

Email Service Features	Company Perspectives by Feature	Hotmail www.msn.com	iName www.iname.com	Juno www.juno.com	Net@ddress Www.netaddress.com	MyYahoo! edit.yahoo.com
Message Management	The sales staffs cover various regions and would like to have the capability to file their messages by region.	Multiple folders supported, with filtering options for automatic filing and a search feature.	In the version we tested, you can create multiple folders, but you cannot filter mail automatically. E-mail delivery was very slow, and iName's server refused some messages.	You can create folders, but you can't filter mail.	Multiple folders, and the service handles automatic message filtering effectively.	Multiple folders, automatic filing rules, and a search option combine to give you almost all the features of an e-mail client.
Security	The ABC sales staff would like to leave no trace of the messages on the computer they use. The computers they access are also used by their competition	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do.	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do. During our testing, iName was mail-bombed, and the server returned all messages that had been sent to it over the past two days	Access to the program is password-protected.	A log-on option expires pages, so they will not be stored in the cache.	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do.
Advertising and Junk Mail ("spam")	ABC employees are pretty busy and really have no time to read or respond to adds. They're busy trying to make the next sale	Annoying animated ads appear at the foot of the window. You can block e-mail from users whose names you specify.	Annoying animated ads appear at the top of screens.	Juno was the only e-mail service that sent us messages with ads, and ads appear when you start the program itself.	Annoying animated ads appear at the top of pages. You can block e-mail from known spammers and from specific addresses.	The interface is ad-free, and you can block messages from known spammers.
Advanced Features	Some of ABC employees have several email accounts.	You can access up to four POP mailboxes, specify whether messages are quoted in replies, and set almost as many filing and filtering options as you can in a standalone e-mail client.	Incoming e-mail can be forwarded automatically. You can choose from other domain names, and 300 additional domains are available for $14.95 a year. You can access iName mail messages with an ordinary mail client for $23.95 a year.	Built-in spell checking and nothing else.	You can schedule messages to yourself or others. You can access up to seven POP mailboxes.	The interface is ad-free, and you can block messages from known spammers.

- Scenario#2

Instructions:

Given the written scenario and tabulated information presented below, select an appropriate Web-based email service provider for a company called Simply Cable Services (SCS). Document the reasoning behind the decision and be prepared to discuss. There are no right or wrong answers.

Scenario:

Simply Cable Services (SCS) has been in business for 10 years. SCS provides cable services to residential and commercial subscribers. SCS has a sales force of about 50 direct sales representatives; however, they are not very knowledgeable about the Internet. In a staff meeting recently, a marketing manager brought up the subject of Web-based email. After some discussion, the directors and senior management agreed that the SCS sales force should become familiar with the Internet and the use of email for a couple of reasons. First, because SCS is preparing to introduce a major new product to its current subscribers, the sales force could use email as a way to quickly and cost-effectively deliver product information to potential customers. Second, email could be used as a communications tool between the sales force and the Sales Managers, who frequently miss each other's telephone calls.

Although management had agreed that Web-based email accounts for all staff would be beneficial, SCS was not sure how to go about choosing one to meet their needs. The Sales Managers wanted everyone on his or her sales force learning and using the same email service. This would make it easier for them to train new sales staff. The SCS Management Information Services (MIS) group was asked for help in choosing a Web-based email service for the company. After conducting some research on the Internet and taking note of the attitudes of some of SCS's employees, the MIS Director tabulated information on five reputable free email service providers. The information was provided to management staff to help them choose the email service provider that would best meet the needs of the sales force and the company. Based on this scenario and the information in the table below, which service do you think SCS management selected? Be prepared to discuss the reasoning behind the decision.

Email Service Features	Company Perspectives by Feature	Hotmail www.msn.com	iName www.iname.com	Juno www.juno.com	Net@ddress www.netaddress.com	MyYahoo! edit.yahoo.com
Multiple Entry Point Availability (Other Web sites where the email service is available)	Management would like one with multiple entry points.	None	www.geocities.com www.infospace.com www.lycos.com www.netscape.com www.pathfinder.com www.switchboard.com	None	None	www.rocketmail.com
Account Setup	The Internet is relatively new to the sales staff. They need a system that will be easy to learn and to demonstrate.	The questionnaire is reasonably simple. No telephone number is requested.	The questionnaire asks for your telephone number but does not inflict a marketing survey on you.	The setup is reasonably easy and automated, but for our ISDN modem, we had to set up manually.	Up to six people can be notified automatically of your new address. The marketing questionnaire is brief, but you have to give an address.	The questionnaire is very simple, with a marketing survey you can ignore.
User Interface	Sales team will be demonstrating product to current subscribers. They need a program that loads fast. Customers are very impatient.	Rich in information (such as breaking news) but cluttered and graphics-heavy, which slows loading. The message list doesn't indicate which messages have attachments.	Graphics-heavy and somewhat slow but easy to navigate.	Simple and clear.	Uncluttered design, with informative message lists that indicate whether a message has been read and whether it has attachments.	Elegant, uncluttered, informative, and ad-free.
Message Creation and Receipt	Sales Staff does not need the ability to attach files. However, they might want to be able to demonstrate to customers.	Well-designed editor, with a spell-checker, a thesaurus, and an option to save a draft without sending. It supports blind copies. All sent messages have an ad for Hotmail at the end.	Simple and straightforward, with an address-book feature and file attachment, but this is the only service that does not display the text of HTML-formatted mail.	Basic features, plus spell-checking and an address book. You can't attach files to outgoing messages. You need to find your own separate decoding utility to deal with incoming attachments. A three-line ad appears at the end of every sent message.	The service supports HTML-formatted e-mail. An option lets you display in-line graphics or show them as icons that you have to click to view. All sent messages have an ad for Net@ddress at the end.	The service supports HTML-formatted e-mail and displays in-line graphics. The address book is easy to manage. You can save drafts before sending. All sent messages have an ad for Yahoo! Mail at the end.

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Email Service Features	Company Perspectives by Feature	Hotmail www.msn.com	iName www.iname.com	Juno www.juno.com	Net@ddress www.netaddress.com	MyYahoo! edit.yahoo.com
Message Management	The sales staff territory covers the whole city. They would like to have the capability to file their messages by sections of the city.	Multiple folders supported, with filtering options for automatic filing and a search feature.	In the version we tested, you can create multiple folders, but you cannot filter mail automatically. E-mail delivery was very slow, and iName's server refused some messages.	You can create folders, but you can't filter mail.	Multiple folders, and the service handles automatic message filtering effectively.	Multiple folders, automatic filing rules, and a search option combine to give you almost all the features of an e-mail client.
Security	The sales staff really does not need high security. They will use account for very little messaging.	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do.	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do. During our testing, iName was mail-bombed, and the server returned all messages that had been sent to it over the past two days	Access to the program is password-protected.	A log-on option expires pages, so they will not be stored in the cache.	Messages remain in the browser cache after you leave the Web site and can be read by anyone who uses the computer after you do.
Advertising and Junk Mail ("spam")	CSS sales staffs are very busy and really have no time to read or respond to adds.	Annoying animated ads appear at the foot of the window. You can block e-mail from users whose names you specify.	Annoying animated ads appear at the top of screens.	Juno was the only e-mail service that sent us messages with ads, and ads appear when you start the program itself.	Annoying animated ads appear at the top of pages. You can block e-mail from known spammers and from specific addresses.	The interface is ad-free, and you can block messages from known spammers.
Advanced Features	Some of SCS employees have several email accounts.	You can access up to four POP mailboxes, specify whether messages are quoted in replies, and set almost as many filing and filtering options as you can in a standalone e-mail client.	Incoming e-mail can be forwarded automatically. You can choose from other domain names, and 300 additional domains are available for $14.95 a year. You can access iName mail messages with an ordinary mail client for $23.95 a year.	Built-in spell checking and nothing else.	You can schedule messages to yourself or others. You can access up to seven POP mailboxes.	The interface is ad-free, and you can block messages from known spammers.

In-class Exercise #2

Searching for Information on the Internet

- Exercise Objective

Given a business scenario, research topics, and considering the search engine guidelines provided in items 1-7 below, learn how to perform a pre-search analysis that will retrieve a manageable amount of relevant information from the Internet.

- Scenario #1

John L. Brown, CEO of Marketing Data Corporation (MDC) is preparing to expand his staff and technology base, which would require research to determine skill, training, and equipment needs. This type of research had been conducted by visiting the library, reading periodicals, and conducting person-to-person interviews. This process was more tedious and unproductive than John would have preferred.

While attending a professional meeting of Marketing Researchers, John overheard a colleague discussing the research capabilities available by accessing and searching the Internet and the World Wide Web. John soon established an Internet connection and discovered its potential to deliver a wealth of information on any subject. However, John and his staff were having trouble taking full advantage of Internet search tools and were not very successful at finding relevant information. John decided to bring in a consultant to help teach them how to search more effectively and reduce the number of total hits returned in response to a set of queries.

The consultant decides to have the MDC staffs who will be doing Internet-based research use the following TOPIC WORKSHEET. This will teach them how to develop useful search criteria, and thereby save time, before actually beginning an Internet search.

Exercises #1 and #2 below provide instructions, examples, and a process for conducting effective Internet searches. As you proceed through the guidelines and exercises below, you will learn how to use the power of

Internet-based search engines to extract high-quality, relevant information from the Web.

Topic Worksheet

Select a research topic or subject area related to skill, training, and equipment needs of MDC:

With consideration given to the questions and pointers in items 1-7 below, analyze your topic and develop useful search criteria as demonstrated in the two examples below. The first blank form can be used to analyze your MDC topic. The second blank form can be used to analyze a topic of your choice.

1. What UNIQUE WORDS, DISTINCTIVE NAMES, ABBREVIATIONS, or ACRONYMS are associated with your topic? These are good to start searching with because their specificity will help zero in on relevant pages.

2. Are there societies, organizations, or groups that might have information on your topic? Use these as a "phrase in quotes" and you may find home pages that link to other related pages, journals, discussion groups, or databases on your topic.

3. What other words are likely to be in ALL Web documents related to your topic? You may want to require these by joining them with AND or preceding each with +[no space]

4. Do any of the words or word combinations from 1, 2, or 3 belong together in a certain order in a familiar phrase or string? Use these as a "phrase in quotes" to search. (E.g., "affirmative action" or "communicable diseases.")

5. For any of the above words or phrases, can you think of synonyms, variant spellings, or equivalent terms you would also expect to be in relevant documents? You may want to use these terms or phrases by joining them with the Boolean operator OR. Each phrase should be placed within parentheses.

6. Can you think of any extraneous or irrelevant documents some of your search words or phrases might pick up? You may want to try to exclude these hits by using a minus sign or AND NOT before selected terms or phrases in your search string.

7. What BROADER terms might include your topic? When browsing directories, searching under a broader category may turn up some new leads.

Search Criteria Summaries

Example 1

Topic:
I am looking for information about the resolution of workplace conflicts arising from racial and ethnic relations in the Chicano communities.
Keywords and Phrases:
conflict resolution, ethnic relations, workplace, Chicano
Possible Synonyms or Equivalent Terms:
Mediation, racial diversity, multicultural ethnicity, Latino, Hispanic
(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)
Broad Subjects:
diversity, ethnic studies, mediation, conflict resolution, social work

Example 2

Topic:
What is the latest scientific consensus on the theory of global warming?
Keywords and Phrases:
scientific consensus, global warming, theory
Possible Synonyms or Equivalent Terms:
greenhouse effect, atmosphere, carbon dioxide, smog
(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)
Broad Subjects:
environment, global warming

Scenario #1 - MDC

Topic:
Keywords and Phrases:
Possible Synonyms or Equivalent Terms:
(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)
Broad Subjects:

Scenario #1 - Other

Topic:
Keywords and Phrases:
Possible Synonyms or Equivalent Terms:
(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)
Broad Subjects:

- Scenario #2

Pamela Robinson is the Supply Manager for West Coast Industries (WCI), which is located in a large office complex. Pam is in charge of ordering supplies and equipment for all WCI personnel and for building maintenance needs. Lately, Pam has been experiencing some difficulty reaching suppliers over the telephone. Pam has also been under pressure from management about the amount of money WCI spends on supplies. She has been hearing that many suppliers in the area are now able to do business via the Internet, which he believes would be more cost-effective, and more convenient.

Pam needs to find new, more economical sources for supplies that offer online services like electronic catalogs, ordering, and payment. She also needs to find out which of his existing suppliers offer online services. Although Pam is familiar with using the Internet, he is unsure about how to conduct a search that will find the information he needs, will not include too much irrelevant information, and will not miss any local suppliers with Web sites. Using the TOPIC WORKSHEET, help Pam develop a useful set of search criteria to accomplish his goal. (Hint: it may help to search for particular *products* that WCI orders, in addition to searching for suppliers by name, geographic area, and type of business.)

Topic Worksheet

Select a research topic or subject area related to Pam's need for supplier information:

With consideration given to the questions and pointers in items 1-7 below, analyze your topic and develop useful search criteria. The first blank form can be used to analyze your WCI topic. The second blank form can be used to analyze a topic of your choice.

1. What UNIQUE WORDS, DISTINCTIVE NAMES, ABBREVIATIONS, or ACRONYMS are associated with your topic? These are good to start searching with because their specificity will help zero in on relevant pages.

2. Are there societies, organizations, or groups that might have information on your topic? Use these as a "phrase in quotes" and you may find home pages that link to other related pages, journals, discussion groups, or databases on your topic.

3. What other words are likely to be in ALL Web documents related to your topic? You may want to require these by joining them with AND or preceding each with +[no space]

4. Do any of the words or word combinations from 1, 2, or 3 belong together in a certain order in a familiar phrase or string? Use these as a "phrase in quotes" to search. (E.g., "affirmative action" or "communicable diseases.")

5. For any of the above words or phrases, can you think of synonyms, variant spellings, or equivalent terms you would also expect to be in relevant documents? You may want to use these terms or phrases by joining them with the Boolean operator OR. Each phrase should be placed within parentheses.

6. Can you think of any extraneous or irrelevant documents some of your search words or phrases might pick up? You may want to try to exclude these hits by using a minus sign or AND NOT before selected terms or phrases in your search string.

7. What BROADER terms might include your topic? When browsing directories, searching under a broader category may turn up some new leads.

Search Criteria Summaries

Scenario #2 - WCI

Topic:
Keywords and Phrases: **Possible Synonyms or Equivalent Terms:**   *(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)*
Broad Subjects:

Scenario #2 - Other

Topic:
Keywords and Phrases: **Possible Synonyms or Equivalent Terms:**   *(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)*
Broad Subjects:

XI.　　Homework Exercises

Using Web-based E-mail

- Exercise Objective:

Learn about some of the free Web-based e-mail service providers, including how differences between their key attributes might make one more suitable than another for business use, based on the specific messaging needs of your company.

- Instructions:

Given the real world circumstances within your company and your employee's perspectives, select an appropriate Web-based free e-mail service provider for your company. To do this, write the name of a candidate e-mail provider at the top of each column in the table below. Each row of the table is labeled with a feature common to Web-based free e-mail service providers. Fill in the corresponding information below each candidate e-mail provider as it applies. Take note of the needs and attitudes of your employees with regard to the various e-mail features and enter this information in the appropriate column. Analyze the tabulated information and choose a suitable Web-based free e-mail provider for your company. Document the reasoning behind your decision.

E-mail Service Features	Employee Perspectives by Feature	Web-based Free E-mail Service Providers				
Multiple Entry Point Availability						
Account Setup						
User Interface						
Message Creation and Receipt						
Message Management						
Security						
Advertising and Junk Mail ("spam")						
Advanced Features						

-----------------------------*Instructor Guide*------------------------------

Searching for Information on the Internet

- Exercise Objective

Given the real world circumstances at your company, a real or sample topic requiring research (e.g., free technical training opportunities), and the search engine guidelines provided in items 1-7 below, learn how to perform a pre-search analysis designed to retrieve a manageable amount of relevant information from the Internet.

- Instructions

The exercise below provides instructions, examples, and a process for conducting effective Internet searches. As you proceed through the guidelines and exercises below, you will learn how to use the power of Internet search engines to extract high-quality, relevant information from the Web.

Topic Worksheet

Research topic:

With consideration given to the questions and pointers in items 1-7 below, analyze your topic and develop useful search criteria as demonstrated in the two examples below. The blank form found after the two examples below can be used to analyze your topic.

1. What UNIQUE WORDS, DISTINCTIVE NAMES, ABBREVIATIONS, or ACRONYMS are associated with your topic? These are good to start searching with because their specificity will help zero in on relevant pages.

2. Are there societies, organizations, or groups that might have information on your topic? Use these as a "phrase in quotes" and you may find home pages that link to other related pages, journals, discussion groups, or databases on your topic.

3. What other words are likely to be in ALL Web documents related to your topic? You may want to require these by joining them with AND or preceding each with +[no space]

4. Do any of the words or word combinations from 1, 2, or 3 belong together in a certain order in a familiar phrase or string? Use these as a "phrase in quotes" to search. (E.g., "affirmative action" or "communicable diseases.")

5. For any of the above words or phrases, can you think of synonyms, variant spellings, or equivalent terms you would also expect to be in relevant documents? You may want to use these terms or phrases by joining them with the Boolean operator OR. Each phrase should be placed within parentheses.

6. Can you think of any extraneous or irrelevant documents some of your search words or phrases might pick up? You may want to try to exclude these hits by using a minus sign or AND NOT before selected terms or phrases in your search string.

7. What BROADER terms might include your topic? When browsing directories, searching under a broader category may turn up some new leads.

---------------------------Instructor Guide---------------------------

Search Criteria Summaries

Example 1

Topic: I am looking for information about the resolution of workplace conflicts arising from racial and ethnic relations in the Chicano communities.
Keywords and Phrases: conflict resolution, ethnic relations, workplace, Chicano
Possible Synonyms or Equivalent Terms: Mediation, racial diversity, multicultural ethnicity, Latino, Hispanic *(Remember to put QUOTATIONS around any phrases or strings of words that belong together)*
Broad Subjects: diversity, ethnic studies, mediation, conflict resolution, social work

Example 2

Topic: What is the latest scientific consensus on the theory of global warming?
Keywords and Phrases: scientific consensus, global warming, theory
Possible Synonyms or Equivalent Terms: greenhouse effect, atmosphere, carbon dioxide, smog *(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)*
Broad Subjects: environment, global warming

Exercise:

Your Topic:
Keywords and Phrases:
Possible Synonyms or Equivalent Terms: *(Remember to put QUOTATIONS around any phrases or strings of words that belong together.)*
Broad Subjects:

XII.   Resources

For more advanced training on conducting business using the Internet and the Web, consider registering for the following San Antonio Electronic Commerce Resource Center (SAECRC) courses:

Internet Business Operations - This course focuses on the efficiencies that can be realized by using the Internet for business. It identifies which business functions can be performed on the Internet and compares the relative cost and efficiency of the electronic vs. traditional methods of conducting business. The course also discusses the future direction of Internet business and the opportunities that exist. Prerequisite: A basic understanding of the World Wide Web.

The Internet as a Business Platform - This course identifies how to make money on the Internet. This seminar builds on the Internet Business Operations course. It addresses basic Internet concepts, presents Web usage demographics and statistics, and explores the commercial structure of the Web as well as the business implications of the Web for small businesses. Prerequisite: SAECRC's Internet Business Operations course.

Marketing on the Internet - This seminar describes advertising, marketing, and reaching new customers using the Internet and the World Wide Web. It also covers how to better serve existing customers and expand business activities. It investigates how to handle orders, collect payments, deliver goods, and provide follow-up with customers. Finally, this seminar looks at real world examples of businesses that use the World Wide Web to accomplish these objectives and improve profitability. Prerequisite: A basic understanding of the World Wide Web.

Getting Started With Electronic Commerce

MODULE 3 – Hardware and Software Requirements

I. Student Objectives
II. Introduction
III. Determine Business Objectives
IV. Approaches
V. Considerations
VI. The "Do It Yourself" Approach
VII. Commercial Software
VIII. Hardware
IX. Shopping for Computer Equipment
X. Summary
XI. Homework Exercises

----------------------------Instructor Guide----------------------------

I.   Student Objectives

Given the real world circumstances at a company, their specific company goals, and the variety of available hardware and software components, select the minimum requirements for the company to conduct business electronically.

II.   Introduction

Business conducted using Internet-based tools and technologies, though different from any other type of business, is no less demanding. Instead of the physical "brick and mortar" store, Web-based business is conducted "virtually" using electronic signals flowing through cyberspace along the framework of the Internet. The right computer hardware and software make it all work. What's right for one business or product line may be wrong for another.

To use the Internet to conduct business or to establish a commercial presence on the Web, a company must: 1) obtain an e-mail address; 2) develop and post a Web site displaying products, services, and other customer-oriented information; 3) provide online customers and business partners with secure electronic payment methods; and 4) provide a responsive means for customer feedback and interaction. Some of the most critical business decisions being made today involve the selection of the computer hardware and software best suited to their e-commerce and online retailing needs and goals.

III.   Determine Business Objectives

Before suitable e-commerce tools and technologies can be selected and developed, a company must decide what type(s) of electronic business it wants to conduct. Every business will need to determine how it wants to use the power of the Internet, the Web, and e-commerce tools to meet its future goals.   Below are three examples of how e-commerce can be used to enhance business operations:

- On-line retailing (business-to-consumer) that allows Web site visitors to shop, order, and pay for products and services.

- Information exchange and wholesale transactions with other trading partners (business-to-business) using electronic data interchange (EDI) technologies.

- Web sites for advertising purposes only that present detailed information about products and services and encourages potential customers to visit the place of business and make in-store purchases.

Taking a good hard look at overall business objectives will ensure that the most beneficial e-commerce tools and technologies are chosen. Simply incorporating some new e-commerce tools, including forking out for supporting hardware and software, will not make a business more efficient and profitable. Solid and workable business models and strategies must first be in place, after which the incorporation of properly tailored e-commerce technologies will help a good business work better.

Approaches

When a company gears up to establish an online presence, several different approaches and strategies can be used. If staff members already have good computer skills, some of the necessary computer programming can be developed in-house, including the creation of a Web site, depending on the computer equipment (hardware and software) available in-house. Alternatively, commercial e-commerce software packages (http://ecommerce.internet.com/resources/print/0,1282,3661_125741,00.html , http://ipw.internet.com/e-business/e-commerce/index.html) and low-cost "build-a-store" Web sites (http://store.yahoo.com/, http://netscape.com/netcenter/smallbusiness/onlineessentials/index.html) are available that will guide staff through one or more phases of the entire process. Another approach is to outsource part or all of the tasks associated with e-commerce and Web site development (http://directory.hotbot.com/Computers/Internet/Commercial_Services/E%2D Commerce/Consultants/, http://dir.yahoo.com/Business_and_Economy/Companies/Electronic_Comm

erce/). Each business will end up using a unique combination of these approaches as they plan for, develop, and market their virtual storefront.

V.   Considerations

Scalability

The size, scope, and expected future growth of a business' electronic initiatives are very important considerations. The chosen hardware and software configurations should be able to accommodate high levels of Web site traffic, business growth, electronic payment, data exchange, and any changes in business strategies.   Other e-commerce products and applications suitable for smaller business operations and lower traffic will be less scalable, but at the same time less expensive and easier to use.

Customer/Trading Partner Readiness

The projected costs associated with conducting business electronically and/or online should be backed up with appropriate market research.   A realistic estimation of the amount of new business and cost savings generated thorough the use of e-commerce technologies will help in weighing the costs and benefits. To put a twist on a familiar phrase, "If you build it, they *may take a while to* come."

Marketing

A new Web site must be aggressively marketed, both online and in more traditional ways. It may take a few days or weeks for Internet search engines to index your site. You may need to adjust certain characteristics of your Web site to make it easier for customers and search engines to find.

Be Prepared

Once your site is noticed, you should be prepared to manage and respond to larger number of e-mail inquiries, orders, payments, customer service issues. Because of these new demands, you may decide to keep a separate set of accounting books for the site and hire additional employees.

VI.   The "Do It Yourself" Approach

If you are confident, skilled, and prepared, you may be able to successfully incorporate e-commerce technologies into your business without expensive software packages or consulting services. However, understand that you will be required to maintain your online presence (a daily, possibly time-consuming, task), conduct any required troubleshooting on hardware and software, and perform limited programming. This strategy can be costly in terms of your time, and may result in unforeseen expenses if significant equipment or software failures occur that cannot be quickly remedied in-house. On the other hand, you can enjoy "getting under the hood" of your software and equipment to fix matters yourself.

The do-it-yourselfer should be familiar with the following:

- Hypertext Markup Language (HTML)

- Java™

- GIF Animations

- CGI and CGI Scripts

- File Transfer Protocol (FTP)

- HTML Editors

- Firewalls

- UNIX

- Testing Tools

- Promotional Tools

HTML

HTML is a standardized way of formatting a plain text document so it can be opened and displayed on-screen by a hypertext document browser. Hypertext is a form of text that links documents together electronically in a

Web-like, non-linear way. These linkages allow anyone connected to the Internet to browse and "free associate" among related documents, or Web pages, as opposed following the linear format of a book or film. Netscape Navigator and Microsoft Internet Explorer are examples of commonly used hypertext document browsers.

HTML formatting inserts English-language symbols into, or "marks up," document text so the browser knows how to display it, how it is hyperlinked to other HTML documents, and how the page interacts with and delivers information to the viewer. A document written using HTML must be formatted in accordance with certain universally accepted rules and conventions. This ensures that the document will be recognized and correctly interpreted by the browser. All browsers are, by definition, able to recognize and display HTML documents, although sometimes with varying degrees of detail. You can easily view the HTML-formatted text of any Web page by selecting the "view source" feature of your browser.

Hypertext Transfer Protocol (HTTP) is a set of communications standards that allow computers to connect with one another over the Internet and exchange information, primarily HTML documents and related data, electronically.

HTML formatted documents can be written by hand; however, it may be more convenient to use one of many HTML editing programs designed to simplify the process for beginners. Even if you use a HTML editor, it is important to have a good working knowledge of HTML so that you can find and fix problems if the document does not perform as expected or display properly on the Web.

Although HTML is a standardized method of formatting Web-based documents, it is also evolving. Make sure your HTML reference guides are up to date. The current version is HTML 4.0. The World Wide Web Consortium (W3C) Web site (http://www.w3.org) is the place to learn about the latest HTML developments, as well what the future holds for HTML and the Web in general.

Java™

Java is a programming language well suited for developing Web-based applications. Java is used to create small niche programs or "applets" that can be referenced in the text of an HTML document and run by a browser. Although people browsing the Web are using all kinds of computer hardware and software configurations, Java applets can run on any computer system by using an operating environment called a Java "virtual machine." The applet itself is downloaded using HTTP from any Internet-accessible computer. Java applets generally add interactivity and attractive features to an otherwise plain Web site.   Multimedia effects are the most common applets found on Web sites and include background music, real-time video displays, animations, and interactive games.   Java is an advanced programming language; however you do not need to be a skilled Java programmer to include Java applets on your Web site because many are pre-written. Many Java applets include instructions for properly incorporating or referencing them in a Web page.

GIF Animations

Graphical Interchange Format (GIF) files, which have the extension ".gif," are image files that can be used to create simple animation effects for display on a Web site. GIF animations are easy to create and fast-loading. Most of the moving banner ads and other small cartoons or moving shapes you see on Web pages are simple animated GIFs. An Internet search for "animated GIF" will return hundreds of Web sites containing thousands of free GIF animations you can select and use on your own Web pages.

CGI and CGI Scripts

The Common Gateway Interface (CGI) specification defines communications between Web browsers, Web servers, and other externally located resources, such as databases and computer programs. A CGI *script* is an external program executed by a command from a Web browser. The CGI script receives, processes, stores, and responds to user information passed along by the Web browser. CGI techniques make a Web site truly interactive by opening real-time channels of communication users and external programs/databases via the Web browser and the Web server. For example, when you complete a form on a Web page and click the "submit" button, a

CGI script will process your information and generate an appropriate response displayed onscreen by your browser.

CGI scripts are common on most large interactive Web sites. When you visit a Web site that requires you to log in, asks you to complete a form, or requires you to click a certain hyperlinked area on an image map, you are executing CGI script. Programming a computer with CGI scripts can be challenging and time consuming, and requires a working knowledge of the Perl programming language. Fortunately, like Java applets, CGI scripts with the extension ".pl" are freely available for execution over the Internet. These scripts, which are located on external computers, can be executed by activating an HTML hyperlink to a particular Web server that will, in turn, execute the script.

Here is a line of HTML-formatted text that contains a hyperlink to a CGI script:

<A HREF=http://www.flipper.com/cgi-bin?SuperScript.pl>RUN ME</A>

The hyperlink will display on the Web page as the words "RUN ME." When activated, or clicked, the link would have Flipper's Web server execute a program called "SuperScript.pl."

File Transfer Protocol (FTP)

File Transfer Protocol (FTP) is a set of standards for copying files to and from a remote computer on the Internet. FTP programs are used to copy HTML documents, or Web pages, from a local system (your PC) to a remote system (the host server), and vice versa. There are many popular, easy-to-use, FTP programs from which to choose. Many are available at no cost on the Internet. One popular and economically priced FTP program is *WS_FTP Pro* available from Ipswitch, Inc. (http://www.ipswitch.com/). Most FTP programs include instructions for transferring files to and from a server.

HTML Editors

Unless you are very familiar with writing HTML documents, you will probably want to use an HTML editing program. These programs allow you to design and create a Web page, including text, styles, and images, without having to insert HTML formatting into the document text. The program takes care of

the HTML formatting. This kind of Web page editor is called "WYSIWYG" (What You See Is What You Get). There are a great number of WYSIWYG HTML editors on the market today. Some offer only "bare-bones" features that require the Web page designer to purchase additional tools – such as image, animation, and video editors, Web browsers, Clip Art libraries, Java, etc. Other HTML editors come fully loaded with all the extras. HTML editors can be obtained free on the Internet or can range in price up to several hundred dollars. The more sophisticated Web page editing programs (which are usually more expensive and may be more difficult to use) offer security and online shopping capabilities. Listed below are the names and Web site addresses of several popular HTML editors.

Microsoft FrontPage, http://www.microsoft.com/frontpage

AOLPress (free with AOL account), http://www.aolpress.com

Adobe PageMill, http://www.adobe.com

Home Page Wizard (free with CompuServe account), http://www.compuserve.com

QuickSite, http://www.sitetech.com

Internet Assistant for MS Word 7.0 (free download), http://www.microsoft.com

Netscape Composer (free), http://home.netscape.com

Claris Home Page, http://filemaker.com

HoTMetaL PRO, http://www.sq.com

WebEdit PRO, http://www.luckman.com

HotDog, http://www.sausage.com (yes, really)

HomeSite, http://allaire.com

Firewalls

A firewall is an electronic "roadblock" or "go-between," usually a combination of hardware and software, situated between the server for a local area

network (LAN) and a public or unrestricted computer network. A firewall provides security by controlling communication to and from the LAN and prohibiting unauthorized access to data and programs by outside parties. All traffic trying to enter (or leave) the LAN must pass through the firewall, which is programmed to transmit only authorized signals. Once through, the "visitor" may be restricted to only selected areas of the LAN. Firewalls typically consist of a single computer stationed outside the LAN that runs specialized software. Although it can allow each LAN computer to access the Internet, a firewall is perceived from the outside as a single Internet address, like a Web server might be. For this reason a firewall is often referred to as a "proxy server" that interfaces with the outside computer world in behalf of the LAN and the valuable information contained within.

UNIX

UNIX is a multi-user operating system that is well suited for use on large mainframe systems – including many of the servers operated by Internet Service Providers (ISP). If your ISP's servers run on the UNIX platform, it will be important to carefully name, and make a note of, your Web page files before they are uploaded to the host. UNIX is case-sensitive and will only recognize HTML filenames with the four-character ".html" extension. (Most other ISP servers run on the Windows NT platform, which is not case-sensitive and will recognize either ".htm" or ".html" filename extensions.)

Testing Tools

Once the pages of your Web site have been are created using HTML, it is important to thoroughly test the site. Testing ensures that:

- Each Web page has the correct appearance when viewed with a browser;

- The various elements of each Web page load properly;

- The text contains no spelling or grammatical errors; and

- Internal and external hyperlinks work.

A good tool to test your site is the Web Site Garage (http://websitegarage.com). Problems detected can be corrected and the

overall "feel" of the site can be adjusted if necessary. Once the Web site successfully passes the testing process, it is ready to be unveiled to the public and promoted. Keep in mind that additional changes and improvements can be made at any time thereafter.

Promotional Tools

Even if you have hired a marketing and advertising firm to handle the promotion of your Web site, you are still ultimately responsible for including the Web site in the company's overall advertising strategy. The effective promotion and marketing of a business Web site should include:

- Registering the site with one or more Internet search engines;

- Including text and design elements in the Web page source code that will help a search engine find it, index it, and retrieve it;

- Exchanging links with other Web sites; and

- Including you Web site address, e-mail address, and other information about the site and its services in the company's existing marketing materials.

Although some commercial software packages and Web site hosting services may promise to promote your site, it is important to stay in control of this responsibility!

In pursuing a reciprocal linking strategy, search (if you have time) for suitable sites that will agree to accept your advertising and that do not have conflicting arrangements with competitors.

VII.   Commercial Software

Companies preparing to conduct business online may invest in one or more commercial software products. Commercial products that support e-commerce can help you create and maintain a variety of online business-related services, including: 1) electronic catalogs and shopping carts; 2) payment transactions and security; 3) order processing; and 4) electronic data interchange (EDI). Dozens of these types of products are on the market

and can range in price from a few hundred dollars to a few hundred *thousand* dollars. Major companies, such as IBM and Microsoft, and many smaller specialty companies, such as iCat and the Vision Factory, make software applications to fit a wide range of business and e-commerce needs.   In spite of all this variety, software packages geared toward establishing a Web-based retail business should all be able to set you up with a basic online "storefront." At a minimum, a Web-based storefront consists of an online catalog (where customers learn about and select products and services), a shopping cart (a virtual way to gather selected items before final purchase), payment transaction and security (credit card authorization, debit card acceptance, and other payment schemes), and order processing (shipping, taxes, inventory, etc.). You may decide to forego using the Internet for retail business and concentrate on using the Internet to conduct electronic business-to-business transactions. To pursue this objective, commercial Electronic Data Interchange (EDI) software packages may provide the ideal solution. Another potentially useful strategy to enhance the exchange of information within the company, as well as with outside businesses and suppliers, is to use networking software programs to establish an in-house computer network (i.e., an "intranet") or a network that links your company with an exclusive list of outside companies (i.e., an "extranet").

Electronic Catalogs

An electronic catalog is similar to a traditional printed catalog as far as the information each should contain: product lists, information, photographs, diagrams, prices, and ordering/payment instructions. The electronic catalog goes a big step further, however, and offers the shopper a fully interactive shopping experience – including animation, video, and sound.   Extra multimedia features can add significantly to the overall size and cost to create and maintain the online catalog. Keeping an online catalog functioning and up to date can be a major undertaking for the EC storefront developer.

Many EC software products include page templates for online catalogs that can simplify the development process. Because maintaining current pricing data and product descriptions can be a time consuming operation, software packages should be able to link the online catalog to information stored in one or more databases. This will allow the online catalog to be updated

automatically when the databases are updated, usually a much easier task than modifying each Web page.

Processing Orders

When a customer is choosing items from an online catalog, it is convenient to give them a virtual "shopping cart" in which to store their selections before final order and purchase. The contents of the customer's cart are stored in a database on the vendor's Web server so the customer can review the selection at their leisure before they "check out." The check out process involves many details related to ordering, inventory, shipping, taxes, and so forth, so look for order processing software packages that support "third party" shipping modules (e.g. Tandata from Tandata Corporation, http://www.tandata.com) and add-on tax calculation packages (e.g. Taxware by Taxware international, http://www.taxware.com). Many other details must be managed and tracked when processing orders: discounts, coupons, accounting entries, inventory control, etc. It may also be necessary to have the online order-processing system interface with existing company databases and accounting systems.

Most EC software packages are able to manage order processing; however, be sure the package you select will meet current business needs and allow for future customization.

Security and Payment

Perhaps one of the most important hurdles to clear when establishing an online business-customer relationship is the issue of mutual trust. Customers must be offered a mode of payment they perceive to be secure, and the business must be able to verify the customer's ability to pay. Common solutions involve the use of credit cards, electronic cash, and purchase orders. Specialized software packages such as CyberCash (http://www.cybercash.com), IBM Payment Suite (http://www.software.ibm.com/commerce/payment), and Microsoft Wallet (http://www.microsoft.com) can provide the security and trust required on both sides of the transaction. These software applications apply encryption technologies to protect data transmissions. Make sure your security and payment software applications can work with Secure Socket layer (SSL) or Secure Electronic Transfer (SET) encryption technologies. You may want to

include information on your Web site about the security features and protections in place, or a telephone number the customer can call of they have concerns about online payment. Most electronic payment solution providers require the vendor to establish a separate bank account for online transactions.

Reports and Privacy Policy Issues

Sophisticated EC software packages are available to collect, store, and update a great deal of information about customers - which pages of your Web site they visit, how much time they spend, what they are buying, how often they return - and automatically generate analytical reports from the data. These reporting tools use a variety of techniques to track customer patterns. Some packages can generate "clicktrails" (lists of each page within your Web site visited by a particular customer), revenue generated by customer, and search words used by customers looking for information at your Web site.

Another very important feature of any Web site is a formal statement, prominently displayed, of the company's privacy policy, including exactly how customer information is gathered, how it will or will not be used, and customer options for restricting access to their information.

EDI

Electronic Data Interchange (EDI) continues to be a workhorse for many business-to-business electronic relationships. For example, Wal-Mart, one of the largest discount store chains in the world, relies on EDI to conduct business with its suppliers. EDI is the computer-to-computer exchange of data between businesses. The "data" in EDI is the electronic equivalent of routine business documents with a standardized format. These electronic formats parallel the layout of familiar paper-based documents such as purchase orders, invoices, advanced shipping notices, etc. Until recently, EDI software packages had a reputation for being difficult to install and use. Many companies have now adopted Windows-compatible EDI applications. Some companies have even moved their EDI functions to a Web-based interface – negating the need for any additional software on either side of the transaction. Nevertheless, EDI remains one of the most mature and sophisticated ways to perform business-to-business data transmissions. Ask

your local ECRC representative for more information and samples of EDI software.

Setting up an Intranet or Extranet

Intranets are the ideal way to exchange and organize electronic information quickly and easily within an organization. Intranets apply the standard protocols of the Internet to an existing local area network (LAN).

Extranets, on the other hand, offer authorized users (customers, suppliers) selective access to an organization's Intranet. Extranets are popular tool for online marketing, customer support, and collaboration. Because an Extranet is an extension of an Intranet, the issues in setting one up are largely the same.

Before setting up either an Intranet or an Extranet, careful consideration must be given to the following: What is its purpose? How might it help or hinder the flow and management of information? Who will use it? Will it be freely connected to the Internet? If so, what kinds of access restrictions will be required (firewalls, passwords, permissions, etc.)? What encryption, id verification, and overall security capabilities will you need?

An Intranet should be built by a professional with previous experience with Internet protocols and HTML coding. Knowledge of Java and other development languages (Perl and CGI) would also be desirable. Pricing will vary greatly, but a small business Intranet should cost you from $10,000 to $25,000, not including hardware. The company's existing LAN should be enough hardware to support an Intranet. One computer will need to be dedicated as an Intranet server.

Your Intranet can connect a variety of machines within the organization, provided each workstation understands Transmission Control Protocol/Internet Protocol. Fortunately, TCP/IP capability is included in most operating systems, including Windows, Windows NT, MacOS, and UNIX.

An Intranet is actually a creation of server and workstation software. A variety of software applications are available to create an Intranet with that includes browsing, e-mail, tracking, indexing, searching, programming, bulletin boards, videoconferencing, etc.

Intranet maintenance duty ranges from monitoring user access levels and privileges, to updating company information and expired hyperlinks. Many businesses assign a qualified, highly skilled worker, or Webmaster, solely responsible for maintaining the Intranet and/or Extranet.

Examples of EC Storefront Software Packages

Product	Vendor	Platform	Description
EZ2-Shop	EZ2-Shop	WinNT, IIS, Win95	EC catalog creation software for small, medium sized business
GO-CART	GO International, Inc.	Hosted service	Develop of GO-CART Shopping Cart system, easily integrated with any existing online catalog
Goldpaint	Goldpaint Internet Services	Linux, WinNT, Win95, SunOS	Electronic storefront that can be used to implement multiple stores under one domain name
iCat	iCat Corporation	Win95, WinNT	Flexible design suited for the novice or the expert
INEX Commerce Court 3.1	INEX Corp.	Client: Win95, Win NT Server: Win NT, Linux, SunOS	EC built to run via MS Site Server Commerce edition
Intershop	Intershop Communications	Win NT (Server Pack 3 required), Sun Solaris, UNIX	Catalog builder offering advanced features found only in high-end application servers
MerchandiZer	Hip Hip Software	Hosted service	Catalog solution used to build and maintain storefronts
Merchant Builder 3.0	The Internet Factory	Win NT (Server Pack 3 required)	Suite of EC tools
Net.Commerce	IBM	IBM, Win NT, Sun Solaris, OS/400	One of the top EC packages
ShopBuilder	NetVentures, Inc.	Any OS and any Web browser	Server-based EC hosting system with various EC tools
Shopsite	Open Market	Linux, Solaris, Win NT	Catalog creation software for the small, medium sized business
ShopZone 2.0	Breakthrough Software	Win 95, Win NT, Sun Solaris, Linux	Useful client/server EC package that makes it easy to set up a site and maintain it without a lot of technical expertise
SoftCart 4.0	Mercantec	UNIX, Linux, Sun Solaris, Win 95	EC software designed for ISPs to offer variety of EC tools
Viaweb	Viaweb Inc/Yahoo	Hosted service	Developer of Web-based, end-to-end storefront authoring tool and hosting service
Virtual Spin	Virtual Spin Corporation	Hosted service	Provider of EC, storefront service

VIII. Hardware

Identifying software needs and preferences, as discussed in the above section, will generally determine hardware needs. The software application will indicate on the packaging exactly what hardware configuration, at a minimum, will be required for it to run. However, there are some general guidelines to follow when identifying EC hardware needs. The following information is applicable to a single computer-office that uses an outside Web-site hosting service. Additional computers in an organization may serve

as workstations and servers, and will have different, though similar, minimum requirements.

Minimum Requirements

Microprocessor Family. Microprocessor families having sufficient operating speed to handle most EC tasks are the Celeron and Pentium (manufactured by Intel) and their equivalents on the market today. New microprocessors with improved speed and other features are introduced regularly. The amount of computer power you can buy with a dollar is always going up, as does the amount of computer power required by each successive release of a software application, therefore, it is usually prudent to acquire the highest-speed microprocessor you can afford. Microprocessor speeds are measured in megahertz (MHz).

Random Access Memory (RAM). Any computer system that will be running Windows-based software should have at least 32 megabytes (MB) of RAM, preferably 64MB. More RAM may improve computer performance, but will come at additional cost. In any case, the computer should have extra memory sockets for installing more RAM in the future.

Modem. Modems allow computers to transmit information over a standard telephone line, which is the way most computers connect to the Internet or conduct EDI. The speeds at which data can be transmitted between computers are steadily increasing, especially with the proliferation of fiber-optic technology. Today's modems are fast (56 kilobytes per second [Kbps]) and inexpensive (<$70). Most modems today also have fax capability.

Hard Disk. Four gigabytes (4,000 MB) of hard disk space is a common size today and you will not save a lot of money by going with a smaller size. Consider installing two hard drives and store your operating system and commercial software applications on the main drive and your Web site data (catalogs, customer information, business records, and anything else that cannot be replaced) on the other. That way, if the main disk fails, the data will be safe. It is crucial to back up all irreplaceable data stored on any hard disk every day to a tape or another computer.

Scanner. To add images to a Web page, especially is the image is in a printed form, a scanner will allow you to transform the image into a suitable digital format. Commercial scanning services are available that will deliver the scanned image files to you on a floppy disk or compact disc. Outsourcing may be cost-effective in some cases, however, with good quality color scanners available at under $100, it may not be difficult to justify its purchase.

Digital Cameras. Digital cameras and digital video camcorders record images electronically (usually on removable memory cards, floppy disks, or tapes) and offer the ability to immediately transfer the images to the computer for viewing, editing, printing or inclusion on a Web site. The quality of the images obtained with these devices is not of the highest quality, but the trade-off is convenience. Look for significant improvements to these cameras in the near future.

Video Capture Device. A video capture device is necessary to capture a still frame or full-motion digital image from an analog (non-digital) video camera. The cost for these devices starts at about $300. Video capture devices that capture a single video frame only are slightly cheaper (starting at about $200).

Sound Card. A computer used to develop Web sites incorporating sound effects will need to be equipped with a sound card. Most computers sold at retail today contain sound cards. Be sure it has stereo capability. A sound card will also allow you to play music CDs on your computer and enjoy sounds (voices, music, etc.) as you browse other Web sites.

Personal Computer (PC) Price Ranges

New PCs sold today are equipped with most, if not all, of the features discussed above and are fully capable of handling most small business needs. For the buyer, the choice is generally between a good deal and a better deal. Your budget will be your guide. Buy the "most" PC you can afford (the most speed, drive space, and memory) to hold back the day when it will require upgrading or replacement. Monitors, speakers, and printers are frequently part of the package, as well as a good selection of useful software applications. If not, they must be purchased separately.

- Low-end Systems (under $1000)

A no-frills system might contain a 366MHz microprocessor, 64 MB RAM, and a 4 gigabyte or greater hard disk, a slower speed CD-ROM drive, a 56K modem, a 2-D accelerated graphics processor (2AGP), and a 15" color monitor.

- Value-priced Systems ($1000-$1500)

You can make up for the slower 300-400 MHz range, but you will make up for it in 64 MB memory, a 56 Kbps modem, and a removable disk drive.

- Mid-range systems ($1500-$2500)

In this range, bargains can be found – with some effort. It will not be the best PC on the market, but the performance differences will be imperceptible in comparison to its higher priced cousins. You can still get a 400 MHz CPU and still include 64 MB memory, a 10 GB hard drive, CD-ROM drive, and monitor.

- Premium-priced systems ($2500 and up)

Full power includes maximum RAM and CPU speed, plus a graphics card, a CD-ROM drive, and a high capacity zip drive.

Internet Connection Types

There are several different ways to "get connected" to the Internet. The type of connections available to you depend on access to telephone and/or cable television lines, the desired data transmission speed, and budget. An Internet connection usually includes e-mail service.

- Standard Modem Service

The easiest and most economical way to establish an Internet connection is to establish an access account with a local Internet Service Provider (ISP). This type of connection uses standard copper telephone lines and will not require the installation of any other special lines or cables, unless you choose to have a separate telephone line installed for the computer. (Generally, when your computer is "on line," incoming callers will hear a busy signal and

will not be able to leave a message unless you have made special arrangements with a messaging service company.) This type of standard connection is available to anyone with a telephone and a 56Kbps modem in their computer, and is generally available at a base price of $10-$20 per month.

- ISDN (Integrated Services Digital Network)

ISDN connections are available over standard copper telephone lines and can transmit digitally encoded data, including audio and video, at speeds up to 128Kbps. An ISDN connection is usually faster and more reliable than a standard 56Kbps modem connection and is available from telephone companies and ISPs capable of delivering digital signals to customers. Setting up an ISDN connection may require the installation of additional hardware, software, and wiring. The setup fee can be several hundred dollars and basic plus per-minute charges can be up to $150 per month.

- Cable modem

Many cable television companies offer Internet access and e-mail to their subscribers through the coaxial cable (copper or fiber-optic) already installed in the customer's home. Cable connections to the Internet are able to transmit data at significant speeds, up to 10,000Kbps. A setup fee covering all hardware and software ranges from $100 to $200 with monthly charges ranging from $30 to $50. A disadvantage is that some cable television companies may struggle to meet customer demand until their systems are fully upgraded to fiber optic lines.

- DSL (Digital Subscriber Lines)

Many telephone companies offer digital subscriber lines that can transmit data speeds ranging from 1,000Kbps to 7,000Kbps, approaching speeds available over coaxial cable. This technology, originally designed for large office environments, has come down significantly in price and is available in most major cities, with many other areas expected to follow.

- WebTV

WebTV is a way of accessing Internet and e-mail service via a set-top box, a television set, a standard telephone line, and a subscription-based service called WebTV Network™.

- Satellite

Satellite services, such as Hughes Electronics' DirectPC™, can deliver a thick stream (up to 400Kbps) of data (i.e., "broadband"), including Internet access and e-mail, to a miniature satellite dish. Because broadband service is only one-way, subscribers to this service cannot *send* data using satellite technology and must rely on other methods for outbound communications. A Seattle, WA company (Teledesic, LLC) is building a global, broadband "Internet-in-the-Sky" using a constellation of low-Earth-orbit satellites. It will be the first network to provide anytime, anywhere, affordable, access to telecommunications services such as computer networking, broadband Internet access, high-quality voice and other digital data needs. This global satellite network is expected to be operational in 2004.

Many businesses are replacing their Intranets with a special type of satellite communications technology called VSAT (very small aperture terminal) that allows one-way service. However, until two-way broadband service is available, many industry experts do not expect to see satellite access to reach a critical mass.

Notebook Computers

Today's Pentium-class notebooks, with their larger, brighter screens and powerful microprocessors are generations removed from their inconvenient "laptop" predecessors. Making the move from a desktop PC to a notebook no longer means a sacrifice in computing power or data capacity. However, there are some trade-offs:

Advantages	Disadvantages
Notebooks are great for apartment dwellers and business travelers, and they move easily from room to room.	Because they are so portable, notebooks are easily dropped, stolen, or lost.
Good notebooks have enough processor power and disk storage to satisfy the majority of users.	You pay at least one third more for the same power as a desktop.
Built-in CD-ROM drives are common, and you can add other accessories via the PC card connector.	Expansion remains more limited than with a desktop PC, and notebook accessories are generally more expensive.
You can take it to the beach!	It may get sandy!

IX. Shopping for Computer Equipment

The variety and selection of computers and related equipment, gadgets, and software is mind-boggling and can be a daunting task. After settling on a computer budget and hardware/software configuration, deciding where and how to make the actual purchases can be another major hurdle. The box may be the same, but the differences among sellers will determine the outcome of your buying experience.

Direct From Manufacturer

Direct sales continue to grow rapidly with companies like Dell, Gateway, and Compaq expanding their online sales presence. When purchasing equipment this way, customers can custom-configure their own computer and rely on consistently knowledgeable sales reps. Because the retail middleman is avoided, shopping at a direct vendor outlet can be economical, but the prices may not be significantly lower than retail. Most direct from manufacturer products are available only over the Internet. First time buyers may be reluctant to buy directly from a manufacturer over the Internet. One possible reason is that the first time buyer wants to see what they are getting before they part with such a large sum of money.

Retail Stores

Local computer stores, national-chain computer superstores, consumer electronics stores, department and discount stores, all have their strengths and weaknesses when it comes to providing what is valuable to the customer, price being just one of many important criteria. The choice is an individual one and there are many good approaches.

- Consumer Electronics Stores

The bulk of PC buyers favor consumer electronics stores, such as Best Buy and Circuit City. Their convenient locations, aggressive marketing, and competitive pricing effectively lure first-time buyers. However, these stores do not specialize in computers, and the staff may not be knowledgeable about what they sell. Generally, the products are sold "off the lot" and cannot be custom ordered. This means you might have to settle on what is available, which may not contain the desired combination of features.

- Local Independent System Integrators

Local independent system integrators, sometimes referred to as "clone shops," occupy a special place in the market. The strength of these stores lies in their ability to build computer systems from scratch from separate components and offer some excellent bargains. However, these stores offer limited warranties and technical support.

- PC Superstores

PC superstores, such as CompUSA and Babbages, play a role in the PC marketplace. These stores, which sell only computer equipment from a variety of manufacturers, are also popular with first time buyers. PC superstores offer relatively low prices and convenient access to a large inventory and range of products, but expertise of sales and support staff is variable.

Shopping on the Web

Springing up every day are new Web sites claiming to offer the "best" retail deals on PC hardware and software. Some are direct from manufacturer sites such as Dell and Gateway. Other virtual computer stores, although seeming to offer a variety of products, promote a particular brand above all

others and are essentially just advertisements. However, some sites are rewriting the rules on shopping by using "robot" technologies that locate, based on criteria specified by the shopper, the best computer bargains on the entire World Wide Web. Other ways to shop for computer equipment is to bid on products sold through an online auction service such as eBay or buy from companies that refurbish or remanufacture equipment.

- Dedicated Storefronts and Resellers

www.dell.com

www.compaqworks.com

www.monorail.com

www.damark.com

www.insight.com

www.gateway.com

- Auctions and Robots

www.ebay.com

www.amcoex.com

www.cr1.com

www.pricescan.com

- Remanufactured PCs

www.packardbell.com

http://mer.shop.ibm.com/shopping/ibmcredit

www.recompute.com

Product Research Sites

Many sites on the Web provide unbiased, detailed information about computer hardware and software products of all types and brands. Given the

time and inclination, you can acquire a lot of useful product knowledge in a short amount of time on the Internet. Here are some recommended sites:

http://www.zdnet.com

http://www.mkdata.dk/click/

Magazines and Periodicals

Due to the rapid expansion of the PC market, ongoing technological advances, and the constant public desire for information on the latest products, a growing number of magazines and periodicals dedicated to every computer niche market have arisen to meet the demand. Some of these periodicals have classified advertising sections devoted to computer equipment of all kinds. Here are some recommended titles:

PC Today (http://www.pctoday.com)

Small Business Computing (http://www.smalloffice.com)

PC Novice (http://www.smartcomputing.com)

Information Week (http://www.informationweek.com)

Consumer Reports (http://www.consumerreports.org)

Computer Shopper (http://computershopper.zdnet.com)

X. Summary

In this Module, we have examined the three general approaches a company can take when establishing an online retail presence:

- The do it yourself approach (Web site design, programming, server setup & maintenance);

- Develop your own Web site, server, and payment capability through the use of commercial e-commerce software packages; or

- Outsource everything and take advantage of the variety of powerful programming and equipment options offered by a Web site hosting service.

A well thought out plan to establish a Web site, with hardware and software power to back it up, will assure your success in electronic commerce. Depending on your objectives for conducting business on the Internet, each choice provides advantages and disadvantages. Your programming and/or choice of EC software package will define the customer experience at your Web site, and your hardware configuration will affect the performance, availability, and scalability of your site. After making the right decisions to meet your business objectives, your customers will reward you with their loyalty and ongoing business.

In-class Exercise

Student Objective

Given a written company scenario and a list of hardware and software components, select minimum requirements the company needs to conduct business electronically.

- Scenario #1

Mr. Smith wants to get online. He has seen all the ".com" advertisements, and he has become convinced his company is missing opportunities. Mr. Smith founded ABC Company in 1985. The ABC Company is a reseller of widgets.   The ABC Company has a sales staff that covers Texas, New Mexico, and Arizona. Annual profits in 1998 were $750,000. His sales force tells him that at least 50% of his regular customers (about 100 businesses) are ready and willing to order parts online. He did business with the federal and Texas State government in the past, but he has not sold anything to the government since 1990.

Mr. Smith currently takes orders using the following methods:

Direct sales orders from his sales force;

Over the telephone from customers with pre-approved credit; and

Over the telephone from customers with credit cards.

ABC Company has a LAN running NT with 10 terminal servers with Internet access through a Local ISP. ABC's four salespersons have their own laptops and email accounts.

Mr. Smith wants to reach the following goals:

Have a Web site with a catalog of products and a telephone and fax number to place orders;

Have a Web site with a catalog of products and credit card sales capability; and

Have an Extranet that his sales force and regular customers can use.

Looking at the following table, help Mr. Smith decide what software and hardware combinations will allow him to reach his goals.

SOFTWARE OPTIONS	
FTP	Firewall
UNIX	CGI
GIFs	Java
HTML	Electronic catalog
Order processing	Payment processing
Privacy policy	EDI
Extranet	Intranet
Database	Middleware
Commercial software package	Web editor
Collaboration	Virus
HARDWARE OPTIONS	
Fax machine	Multifunction peripheral
Dedicated phone line	Processor speed
RAM	Modem speed
Hard drive	Scanner
Digital camera	Video capture card
Sound card	Desktop PC
Web server	Proxy server
Notebook computer	Videoconferencing
Storage device	Web hosting service

XI. Homework Exercises

Exercise Objectives

Given the real world circumstances at your company, your specific company goals, and the variety of available hardware and software components, select the minimum requirements for your company to conduct business electronically.

Instructions

When determining hardware and software requirements, consider your company's:

- Geographic sales area

- Customer readiness to place orders online

- Desire to pursue and win government contracts

- Current order-taking and payment receiving methods

- Internet connectivity

- Goals with regard to offering products online and creating an online catalog

Using the following lists of possible software and hardware options (not necessarily all-inclusive), decide which software and hardware combinations will allow your company to reach its electronic commerce goals.

SOFTWARE OPTIONS	
FTP	Firewall
UNIX	CGI
GIFs	Java
HTML	Electronic catalog
Order processing	Payment processing
Privacy policy	EDI
Extranet	Intranet
Database	Middleware
Commercial software package	Web editor
Collaboration	Virus
HARDWARE OPTIONS	
Fax machine	Multifunction peripheral
Dedicated phone line	Processor speed
RAM	Modem speed
Hard drive	Scanner
Digital camera	Video capture card
Sound card	Desktop PC
Web server	Proxy server
Notebook computer	Videoconferencing
Storage device	Web hosting service

Getting Started With Electronic Commerce

MODULE 4 – Making the Transition

I.   Student Objectives

Given a scenario, written guidelines, devise a tentative short-range plan for transitioning from paper-based commerce to electronic commerce.

II.   Introduction

Just a few years ago, anyone who said conducting business over the Internet would amount to anything was considered a starry-eyed dreamer. After all, who would trust confidential information and credit card numbers to a medium as "insecure" as the Internet? We now know those dreamers were true visionaries. Witness the astonishing degree to which consumers and businesses alike are taking care of business on the World Wide Web. The Internet is proving to be the great equalizer, allowing the smallest of businesses to access global markets and compete against the giants in the industry. If projections made by Forrester Research prove accurate, the value of all business conducted using the Internet during 2003 will approach $3.2 trillion - representing nearly 5 percent of all global sales.

III.   Background

Tip for Trainer

Making a business work on the Internet requires monitoring and adjustments. Keep the goals and business objectives in mind.

Thousands of business enterprises have entered the world of electronic commerce (i.e., "e-commerce," "e-business," "EC") to varying degrees. This can mean anything from creating a simple Web site to display product information to establishing a complex and sophisticated electronic network with customers and suppliers, including online shopping and payment processing. The IBM Company defines e-business as what happens when companies connect critical business systems *directly* to critical constituencies—customers, employees, vendors, and suppliers—via Intranets, Extranets, the Internet, and the World Wide Web. E-business is all about "paperless" and "real-time" connections, interactions, and exchanges of information. Retail Web sites can provide lists of products and prices, as well as take orders. Salespeople no longer consult last month's printouts—they can now close deals using up-to-the-minute information available on the Web. Easy, interactive access to real-time data via the Internet has opened

new possibilities for businesses. Many can extend their reach in the marketplace. Internet access and the ability to move information and money at lightning speed can breathe new life into an existing business. However, the success of any organization that plans to incorporate e-commerce technologies will be determined by its overall business model, its short- and long-term goals, and how it chooses to make the transition.

The Internet promises to boost a company's efforts to reach time-honored business goals:

- Broaden the reach and effectiveness of marketing efforts;

- Improve customer relations, service, and support; and

- Increase sales and profits.

Tip for Trainer

Consider taking progressive steps toward the overall goal in increments.

Some business Web sites are created solely to establish an online presence, i.e., "Hey, we're out here too!" Other businesses have found that a well-designed Web site is a powerful tool when used to improve customer service, display/deliver product information, and provide immediate responses to customer inquiries. Some Web sites go beyond posting information and answering questions to allowing customers to place orders online, often unassisted by a human interface. The simplest version of this might include instructions to print a page, fill in order details, and fax it to a given number. More sophisticated sites provide the shopper with a systematic ordering process that calculates all charges including sales tax and shipping costs. An increasing number of Web sites can accept and process a customer's credit card or debit card payment within seconds. As can be seen, the services and features made available to online customers will be a reflection of the marketing, customer service, and sales goals of the company.

IV. From Business to Electronic Business – Four Major Steps

Tip for Trainer

PLAN! PLAN! PLAN! Get the message!!!!!!

1. Rethink the Business and Make a Plan

For existing businesses, the development of a plan to incorporate Internet-based technologies into business practices is a crucial first step. This plan may in fact become an updated version of the original business plan,

especially if the overall business model is examined and modified to accommodate e-commerce technologies.   Alternatively, the plan may propose only a small-scale "add-on" venture into the world of e-commerce, for now.   In any case, specific business goals and objectives must be reviewed and adjusted if necessary, and a means for assessing the performance of changes should be devised. This information will guide the development of a Web site and the need for other information processing/exchange capabilities (e.g., EDI).

A good transition plan will consider and address the issues such as the following:

(1) How do we foresee incorporating Internet-based technologies into the way we do (want to do) business?

(2) What specific goals do we have for new business conducted online, as well as business overall?

(3) Do we want to use the Internet simply as an economical way to transmit data?

(4) Do we hope to boost market share and sales revenues?

(4) Do we want to enter an entirely new market and/or establish a new distribution channel?

(5) How much will it all cost? What equipment do we need?

(6) How will we phase in new systems, technologies, and processes?

2. Making the Product Stand Out

For startups wanting to conduct the bulk of their business online, or for companies wanting to market a new product online, there are some important issues to consider. If a business is already successfully selling a product that supplies a niche market, it is likely to be successful when sold over the Internet. For products or services that are not unique to a particular market, and will need to attract some attention, consider the following suggestions from Fergal Byrne of the Webreference HTML Newsletter:

(1) If the online product is no great leap forward compared with the real-world one, try changing what's being sold about the product. For example, Christmas decorations sold online may be similar to those sold in department stores, but the Web site allows the shopper to experiment with decorating "virtual" rooms and trees in the comfort of their home before placing an order.

(2) If the product is not unique enough, try specializing in something the company does a lot of anyway.

(3) If the company doesn't already have a loyal online following, think about establishing a new and unique position in the marketplace. For example, a birdhouse manufacturer can establish a reputation as the "expert" in its field by publishing documents it has written, studies it has conducted, and testimonials from satisfied customers that relate specifically to birdhouse construction. Be the only place where a good collection of frequently updated information on a narrow topic can be found.

(4) Another way to get attention is to call the company or the Web site something outlandish or intriguing. Do you think "Monster.com" would have been as successful if it was called "bigjoblist.com"? It's fun to check out the "Monster Board" and know that "My Monster" is ready and waiting for you.

3. Building the Web Site

Once the products and services to be offered to online customers are identified, the next important issue to tackle is how to build the perfect online selling machine. E-Commerce Times (an online periodical) recently examined several successful online stores and concluded they all have the following similarities:

Tip for Trainer

Each of these steps is important to a successful Web business.

- Clear product descriptions

- Easy ways for the shopper to browse the site

- Fast loading Web pages

- Assurances about the privacy of customer's personal information.

- Clearly posted technical support policies

- Unconditional exchange and refund policies

- Real humans attending to customer service needs

- A pleasant color scheme and tasteful design elements on the Web site

4. Attract Visitors to the Web Site

The three essential elements of retail sales are product, market, and location; and when it comes to retailing, the most important is always location, location, and location (or at least good directions). This is just as true on the Internet. Customers need to know where and how to find the site, or can easily stumble across it when browsing for something similar. Search engines are unable to index every one of the thousands of new Web sites created every day. Consequently, strategies have evolved to increase the odds that a new Web site will be noticed and included in a search engine's database. An example of a Web site that offers "Web positioning" services is http://www.ei-web.com/. The fact that a business has a Web site should be vigorously promoted. Every letter, fax, pencil, pen, business card, invoice, brochure, and purchase order should advertise the business's Web site.

IV. Development Options for E-Commerce Sites

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Tip for Trainer

Integration with key entities are important to successful electronic commerce.

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Just a few years ago, when retailers first started conducting business online, they were not well integrated electronically with key entities such as banks, suppliers, warehouses, shippers, etc; and, as a result, costs were high and customer service was less than desired. However, with today's more evolved e-commerce technologies, the integration of all these elements is much more efficient and cost-effective. There are a number of options available for becoming an online merchant, including low-cost "instant storefront" software packages and online "small business" sites that offer step-by-step guidance (http://smallbusiness. yahoo.com/smallbusiness/ and http://home.netscape.com/netcenter/smallbusiness/index.html). Major retailer Web sites (http://www.dell.com, http://landsend.com), consisting of hundreds or thousands of pages, can cost tens of thousands of dollars to develop and thousands more per month to maintain. Other smaller-scale

options may only cost a few hundred dollars a month. The right path for the business to take will depend on the scope of the products and services offered and the strategic role e-commerce is intended to play.

The "Instant" Approach

Yahoo!, the famous Internet search-engine giant, recently acquired an e-commerce solution provider known as Viaweb. With this purchase, which resulted in the creation of Yahoo!Store (http://store.yahoo.com/), Yahoo! emerged as a leader in the business of providing low cost e-commerce solutions to any type of business. The Yahoo! Store allows a merchant to set up an online shop quickly, and without any knowledge of HTML or prior Web site development experience. One of the features of Yahoo! Store is an electronic "shopping-cart" that allows a shopper to keep track of selections and purchases. The shopping cart technology also allows the Web site to suggest related items to the customer. Another feature is the ability to monitor and analyze site traffic. The cost of getting started with Yahoo! Store ranges from $100 to several hundred dollars per month, depending on how many items are sold per month. In fact, most e-commerce small business sites offer similar basic services and charge similar rates.

MindSpring is a large, publicly owned Internet Service Provider (ISP) and national Web-hosting service. It also offers e-commerce capability to the Web sites it hosts (http://business.mindspring.com/commerce/index.html). MindSpring provides users with options and software packages for transforming a personal home page into an e-commerce store that supports secure credit card transactions and advanced shopping cart features.

IBM has launched IBM Web Solutions (http://web.solutions.ibm.com/hosting/hostecom.html); a subscription-based offering that provides all of the hardware, software and services a company needs to harness the power of the Internet through a single connection, starting at $99 per month.

Other "portal" sites offering free and very low-cost instant storefront services are springing up everywhere. These sites allow a small business to set up an online storefront in a matter of minutes, including the capability to process credit card payments and manage orders.

Tip for Trainer

A good way to establish a small inexpensive Web business.

Tip for Trainer

Customize approaches will cost more than the previous option.

Customized Approaches

The instant storefront options discussed above may be suitable for many small or home-based businesses with little technological expertise. However, some companies may want to play a more active role in setting up and conducting their own e-commerce affairs. Companies taking this route will find a variety of tools, techniques, and equipment available for designing, building, marketing, and maintaining a retail Web site and other data exchange capability. Three general approaches are discussed below:

- ISP Hosted—Merchant Develops Web Site

There are numerous software packages on the market that can help a business develop its own e-commerce Web site. These packages may provide a lot of "canned" templates and features, but will still require some degree of skill to use. Some business may have the in-house expertise to develop a customized Web site, or may hire a consultant for this task. In either case, the Web site developed by the company is hosted by an outside ISP. The company may then retain responsibility for updating and maintaining the Web site, or it may outsource this responsibility to the ISP or a third party. (More detailed information on Web hosting is provided in the next section.)

Tip for Trainer

These options will allow a business more control of their Web site and technology.

- In-house Hosting

If a business expects to conduct a significant volume of Web-based business, it will need a high degree of customization and flexibility built in to its Web site and e-commerce processes. In this case, it may be appropriate to purchase or lease a total hardware and software solution, including a significant amount professional assistance. The business will be operating its own server, database, and online payment system, in addition to developing and maintaining its own Web site. A business should expect to make a substantial investment of several tens of thousands of dollars for this much power and control over its e-commerce affairs.

- Starting From Scratch

If a business's e-commerce functions and processes are expected to be unique and complex, it may need to start at square one and have a system built from the ground up. This includes custom-designed hardware and

software, marketing, electronic connections to supplier and distributor networks, training of company staff, periodic re-designs and overhauls, and routine maintenance. A major information technology (IT) firm specializing in total e-commerce solutions will have to be retained. Expect to make a major investment of several hundred thousand dollars to achieve this level of Internet presence.

- A Word to the Wise

A Web site's work is never done**. O**ne of the most serious mistakes a company can make, next to having a "build-it-and-they-will-come" mentality, is to assume that once a retail Web site has been created, it can be left alone until the online catalog needs updating. It is well documented that a customer base, even a loyal one, expects to see new, value-added features and interactive opportunities on a regular basis. A Web site that is not dynamic makes the company seem stale. When a Web site is refreshed and updated often, customers and visitors sense that someone is "home" and are far more likely to return to the site.

Also, be careful of trying to do too much, too soon. Some businesses regret jumping in with a product or Web site that's not quite ready, since it's hard to recover from a botched launch, especially one that compromises customer service. At the same time, some companies regret launching too late trying to get every detail resolved, which lost them sales the opportunity for early brand recognition. As can be seen, there is a reasonable middle ground between over-eagerness and caution that each business enterprise must find. The sensible path is to launch an e-commerce business initiative when a solid core of well-planned features and functions is operational. The rest will be dictated by the marketplace.

Tip for Trainer

Each of the following options should be considered carefully. A business should select an option to start with and consider changing as necessary.

V. Web Hosting

The cost to a small business to have a Web site hosted by a commercial ISP can range from around $25 to many thousands of dollars per month. The cost varies with the amount of equipment and services the ISP must dedicate to the hosted Web site. Common Web hosting arrangements include:

Local ISP Hosting of Company-built Web Site

This will probably be the least expensive option. If the Web site includes forms that collect information from customers or allows customers to query databases, the host server will need to dedicate more computer storage space and processing capability to the site, driving up monthly costs. (Keep in mind that setting up an in-house host server can cost from $2,000 to $10,000, depending on the equipment required.)

Use a dedicated server co-located at an ISP

With this arrangement, the business is allowed to connect to a dedicated Web server located at the ISP, thereby giving the dedicated server access to all the ISP's services. This option allows the use of a T1 connection without the additional cost to have one installed (usually about $500 per month).

Use a Dedicated Server Maintained by a Large Host Company

Web hosting services include a share server, maintenance services, technical support staff on-call around the clock, and a robust infrastructure. Most Web hosting services will also register your domain name as well as provide a fixed IP address for your Web site.

Initial setup fees for a Web host range from $50 to $100 plus monthly charges from $20 to $50 and up. Typical service agreements provide a set amount of file storage space (typically 20MB to 50 MB) and data transfer allowance (1 GB to 10 GB per month). [Note: One gigabyte of data transfer equals about 20,000 hits a month on a typical (50K) Web page.] More storage or bandwidth can generally be purchased by upgrading to a different monthly plan or by paying incremental costs set by the hosting company.

Your monthly payment typically includes other services, such as technical support and POP mailboxes. It may also include access to CGI, JavaScript, MS FrontPage extensions, and online retailing tools, such as shopping cart software and secure credit card transfers. Also gaining in popularity is support for multimedia add-ons, such as Shockwave or RealAudio/Video.

Benefits of Web Hosting

Issues ranging from the reliability of mission-critical Web activities, to faster, better Web access, are among the reasons for using a Web hosting service. Reduced cost, added functionality, reliability, and technical support combine to make using a hosting service an attractive alternative to maintaining the hardware.

Domain name identity. Although you can easily do this yourself, the host site will fix your IP address and reassign it whenever necessary.

Reduced cost. The cost of a Web server (NT or UNIX platform) is not cost prohibitive; almost any PC on the market can function as a Web server. However, the cost of maintaining these machines on a 24-hours a day, 7-days a week basis and the cost of the routers and telephone connections can add up over time. Few companies use the entire capacity of a hi-speed link (e.g. $800-$3500 per month for a 1.54 Mbps T-1 line). When using a Web hosting service, one can pay for only the connectivity (or bandwidth) actually used.

Improved access, speed, and reliability. Web hosting services can boast a 99+% reliability (less than an hour a week of downtime) by employing a 24/7 support staff and building a high degree of equipment redundancy such as backup servers and backup Web links ("mirror" sites).

Tech Support. With Web hosting services, the term "tech support" means more than troubleshooting when the system acts up. Tech support usually means extended customer support in getting set up, making sure your scripts run correctly, and custom programming to meet your particular needs.

Choosing a Web Hosting Service

The top Web hosting companies provide all the essentials. Unless you have special needs or concerns, you will find a list of top rated Web host services at Top Hosts (http://www.tophosts.com) or the Ultimate Web Host List (http://webhostlist.InternetList.com). Top Hosts includes a searchable list of several hundred hosting services, along with location, monthly prices, setup fees, and disk-space allocations. Top Hosts also ranks Web hosting service providers in four different "top 10" lists by value, quality of support, reliability,

and overall service. The Ultimate Host List has a "top 25" list of hosting service providers.

Calculating Web Hosting Costs

Most Web hosting service providers have packaged their services into attractive bundles – starting at $20 per month at the low end and going up to several hundred dollars per month (or more) at the high end.

One time set up fee. All providers charge an initial setup fee, typically $40 to $100. This fee is separate from the $70 paid to register a domain name. The size of the setup fee does not seem to equate to quality or amount of service, so look for a low set up fee.

Basic monthly charge. Once setup is completed, you will pay a monthly fee to keep your Web site active. This charge covers a specified amount of disk storage space on the server and a maximum quota of data transfer per month. While some services charge less than $20 per month, deals at this low-price level typically include meager storage and transfer allowances. For a robust small business site, you should expect to pay between $25 to $50 per month. Many ISPs have upgrade options that let you move on to higher resource levels at a higher fee. For example, Hiway Technologies has a $24.95 plan that offers 20MB of disk storage, 1GB data transfer, plus essentials such as a CGI local subdirectory and FrontPage extensions. For $49.95, the company doubles your data transfer allotment to 2GB, increases storage space to 50MB, and adds chat, CyberCash, and SecureServer Support. With either plan, transfer overages are billed at 10 cents per megabyte.

Storage charge.   Unless you have a huge number of pages or use numerous graphics, it is unlikely you will exceed the typical 10MB to 20MB basic storage package. A few bargain basement services offer as little as 2MB. In any case, most services will sell additional storage space for about $1 per MB per month.

Bandwidth fee. The charges for transferring data from your Web site to visitors' browsers are the most unpredictable and hidden costs of your Web site. Until you begin to establish traffic patterns, it is impossible to estimate your bandwidth requirements. If you have a lot of graphics, each and every

visit can consume a great deal of bandwidth. Even 1GB (20,000 hits per month) allowance can begin to look skimpy. Some hosting services have built-in "circuit breakers" that will either shut down your page once you run out of allowance, or alert you by e-mail before additional charges are incurred.

VI. Summary

Getting an e-commerce Web site up and running is well within the capabilities of a determined entrepreneur or small business owner. Many businesses are successfully conducting business on the Web with a minimum of special equipment limited technical expertise. If the product or service being marketed online is in demand, a little marketing effort can bring a world of prospective customers to a company's Web site. Just remember; be prepared to fill those orders!

Module 4 – In-class Exercise

The Awards Craft Company

The Awards Craft Company, established in 1963, assembles and distributes a wide range of custom-imprinted promotional products (i.e. pens, pencils, highlighters, mugs, key chains, trophies, plaques, etc.) Approximately 60% of their business is generated by recommendations from previous customers. The other 40% is based on advertising, short-term contracts, and street traffic. The company has eight employees and one operating location. The company has a local area network (LAN) using Windows NT server software. There are 10 computers in the LAN connected to the server. The workers use Microsoft's Office 97 Professional Edition as their primary office automation package.

The company's CEO Mr. Bob Thomas. He is interested in reaching a larger number of prospective customers in an attempt to increase market share. To accomplish this, Mr. Thomas has set two business goals to be reached within 90 days. One is to establish a Web presence for the company capable of delivering information about products and services to prospective customers, as well as taking orders and accepting payments online. The second is to position the company so it can begin bidding on, and submitting proposals for, federal and state government contracts electronically.

The company has access to the Internet through a local Internet Service Provider. Mr. Thomas and two of his staff have attended an introductory seminar on electronic commerce at the local Electronic Commerce Resource Center, after which he assembled a list of electronic technologies and solutions that seem to have the potential to help the company reach its stated goals. It's decision time for Mr. Thomas. Put yourself in his place. Use the following list as a general starting point and use any information presented in Modules 1-4 of this course to complete the following exercise.
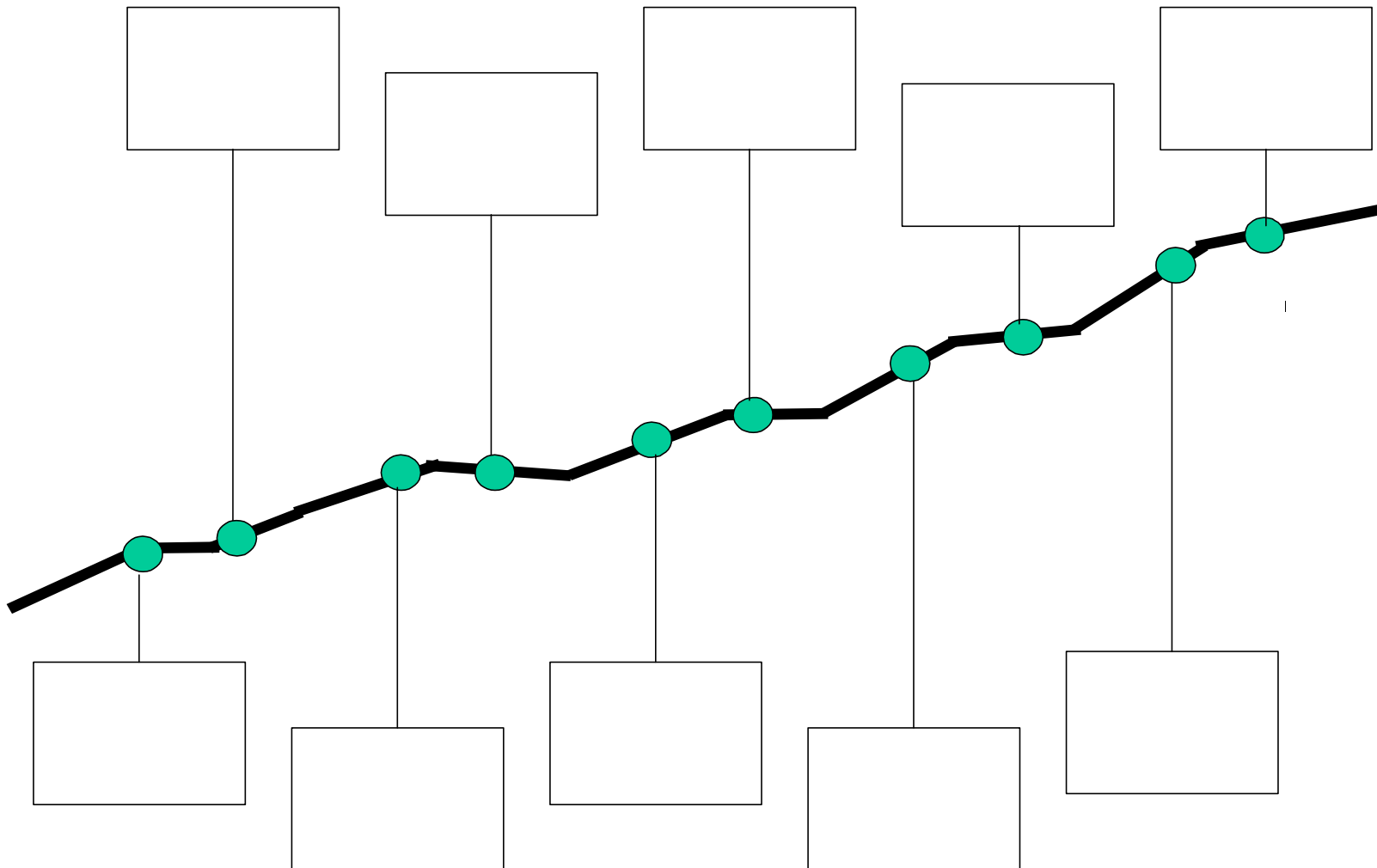
Select tools, technologies, and actions that are likely to help the Awards Craft Company meet its stated goals. Organize the selections into a "road map" or flow chart (see next page) that shows a workable course of action or process for reaching the company goals.

Examples of EC Technologies and Solutions

- Build a Web Site

- Provide company-wide access to the Internet

- Build an electronic catalog

- Rent space on an electronic mall

- Become EDI-capable

- Build an Internet storefront

- Accept credit card payments via the Internet

- Begin a staff training program on EC

- Advertise via the Web

- Investigate the potential for commercial EDI

- Register to do business electronically with the Federal Government

EC Road Map

VII.   Homework Exercises

Scenario:

Your company is efficiently operated and currently profitable, but you have set a new goal to increase your market share in order to remain competitive into the future. You have chosen to explore the use of electronic commerce and Internet-based technologies to attract, supply, and better serve customers. Your immediate objective is to develop an electronic catalog of your products/services and make it easily available to current and prospective customers. You have also chosen to eventually incorporate online ordering and payment features for the convenience of customers and business partners, but you are not sure when your company will be ready to fully implement these services.   Assume the computers in use at your company are each less than one-year-old (i.e., lack of computer power and basic PC components is not a concern).

Questions:

Based on the above scenario and considering the information presented in class during this module, which of the EC tools and technologies listed below might you consider when developing an electronic catalog? (See table below.)

Examples of EC Technologies and Solutions

- Build a Web Site

- Provide company-wide access to the Internet

- Build an electronic catalog

- Rent space on an electronic mall

- Become EDI-capable

- Build an Internet storefront

- Accept credit card payments via the Internet

- Begin a staff training program on EC

- Advertise via the Web

- Investigate the potential for commercial EDI

- Register to do business electronically with the Federal Government

EC Road Map
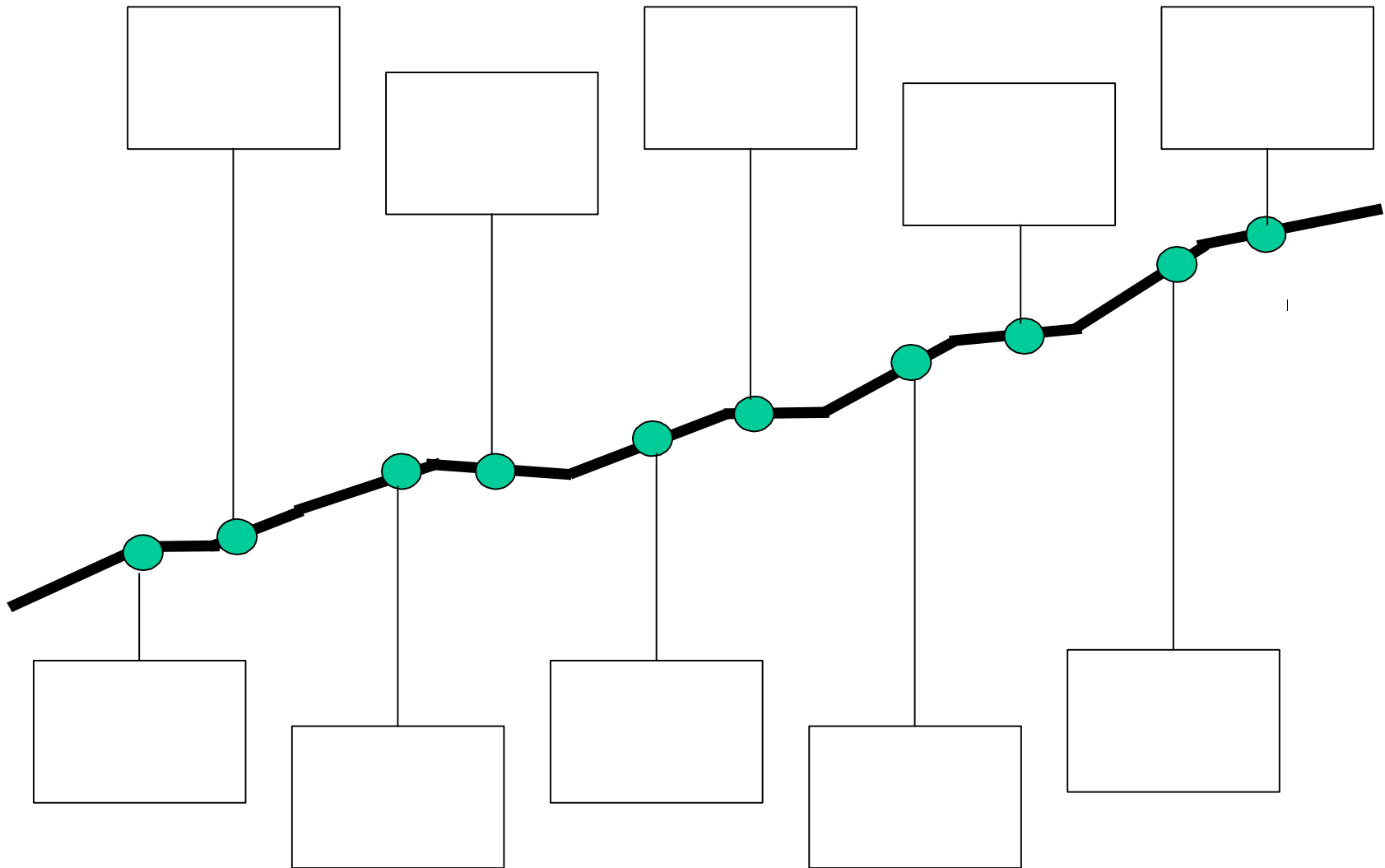
Getting Started With Electronic Commerce - GLOSSARY

ADN (Advanced Digital Network) -- Usually refers to a 56Kbps leased-line.

ADSL -- See: DSL

Anonymous FTP -- See: FTP

Applet -- A small Java program that can be embedded in an HTML page. Applets differ from full-fledged Java applications in that they are not allowed to access certain resources on the local computer, such as files and serial devices (modems, printers, etc.), and are prohibited from communicating with most other computers across a network. The current rule is that an applet can only make an Internet connection to the computer from which the applet was sent. See Also: HTML, Java

Archie -- A tool (software) for finding files stored on anonymous FTP sites. You need to know the exact file name or a substring of it.

ARPANet (Advanced Research Projects Agency Network) -- The precursor to the Internet. Developed in the late 60's and early 70's by the US Department of Defense as an experiment in wide-area-networking that would survive a nuclear war. See Also: Internet

ASCII (American Standard Code for Information Interchange) -- This is the de facto worldwide standard for the code numbers used by computers to represent all the upper and lower-case Latin letters, numbers, punctuation, etc. There are 128 standard ASCII codes, each of which can be represented by a 7 digit binary number: 0000000 through 1111111.

Backbone -- A high-speed line or series of connections that forms a major pathway within a network. The term is relative, as a backbone in a small network will likely be much smaller than many non-backbone lines in a large network. See Also: Network

Bandwidth -- How much stuff you can send through a connection. Usually measured in bits-per-second (bps). A full page of English text is about 16,000 bits. A fast modem can move about 15,000 bits in one second. Full-motion full-screen video would require roughly 10,000,000 bps, depending on compression. See Also: Bps, Bit, T-1

Baud -- In common usage the baud rate of a modem is how many bits it can send or receive per second. Technically, baud is the number of times per second that the carrier signal shifts value - for example a 1200 bit-per-second modem actually runs at 300 baud, but it moves 4 bits per baud (4 x 300 = 1200 bits per second). See Also: Bit, Modem

BBS (Bulletin Board System) -- A computerized meeting and announcement system that allows people to carry on discussions, upload and download files, and make announcements without the people being connected to the computer at the same time. There are many thousands (millions?) of BBS's around the world, most are very small, running on a single IBM clone PC with 1 or 2 phone lines. Some are very large and the line between a BBS and a system like CompuServe is crossed at some point, but it is not clearly drawn.

Binhex (BINary HEXadecimal) -- A method for converting non-text files (non-ASCII) into ASCII. This is needed because Internet e-mail can only handle ASCII. See Also: ASCII, MIME, UUENCODE

Bit (Binary DigIT) -- A single digit number in base-2, in other words, either a 1 or a zero. The smallest unit of computerized data. Bandwidth is usually measured in bits-per-second. See Also: Bandwidth, Bps, Byte, Kilobyte, Megabyte

BITNET (Because It's Time NETwork [or Because It's There NETwork]) -- A network of educational sites separate from the Internet, but e-mail is freely exchanged between BITNET and the Internet. Listservs®, the most popular form of e-mail discussion groups, originated on BITNET. BITNET machines are usually mainframes running the VMS operating system, and the network is probably the only international network that is shrinking.

Bps (Bits-Per-Second) -- A measurement of how fast data is moved from one place to another. A 28.8 modem can move 28,800 bits per second. See Also: Bandwidth, Bit

Browser -- A Client program (software) that is used to look at various kinds of Internet resources. See Also: Client, URL, WWW, Netscape, Mosaic, Home Page (or Homepage)

BTW (By The Way) -- Shorthand appended to a comment written in an online forum. See Also: IMHO

Byte -- A set of Bits that represent a single character. Usually there are eight Bits in a Byte, sometimes more, depending on how the measurement is being made. See Also: Bit

Certificate Authority -- An issuer of Security Certificates used in SSL connections. See Also: Security Certificate, SSL

CGI (Common Gateway Interface) -- A set of rules that describe how a Web Server communicates with another piece of software on the same machine, and how the other piece of software (the "CGI program") talks to the Web server. Any piece of software can be a CGI program if it handles input and output according to the CGI standard. Usually a CGI program is a small program that takes data from a Web server and does something with it, like putting the content of a form into an e-mail message, or turning the data into a database query. You can often see that a CGI program is being used by seeing "cgi-bin" in a URL, but not always. See Also: cgi-bin, Web

cgi-bin -- The most common name of a directory on a Web server in which CGI programs are stored. The "bin" part of "cgi-bin" is a shorthand version of "binary", because once upon a time, most programs were referred to as "binaries". In real life, most programs found in cgi-bin directories are text files -- scripts that are executed by binaries located elsewhere on the same machine. See Also: CGI

Client -- A software program that is used to contact and obtain data from a Server software program on another computer, often across a great distance. Each Client program is designed to work with one or more specific kinds of Server programs, and each Server requires a specific kind of Client. A Web Browser is a specific kind of Client. See Also: Browser, Server

Cipher -- A set of rules used to transform original information into its coded form. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Co-location -- Most often used to refer to having a server that belongs to one person or group physically located on an Internet-connected network that belongs to another person or group. Usually this is done because the server owner wants their machine to

be on a high-speed Internet connection and/or they do not want the security risks of having the server on their own network. See Also: Internet, Server, Network

Cookie -- The most common meaning of "Cookie" on the Internet refers to a piece of information sent by a Web Server to a Web Browser that the Browser software is expected to save and to send back to the Server whenever the browser makes additional requests from the Server. Depending on the type of Cookie used, and the Browser's settings, the Browser may accept or not accept the Cookie, and may save the Cookie for either a short time or a long time. Cookies might contain information such as login or registration information, online "shopping cart" information, user preferences, etc. When a Server receives a request from a Browser that includes a Cookie, the Server is able to use the information stored in the Cookie. For example, the Server might customize what is sent back to the user, or keep a log of particular user's requests. Cookies are usually set to expire after a predetermined amount of time and are usually saved in memory until the Browser software is closed down, at which time they may be saved to disk if their "expire time" has not been reached. Cookies do not read your hard drive and send your life story to the CIA, but they can be used to gather more information about a user than would be possible without them. See Also: Browser, Server

Cyberpunk -- Cyberpunk was originally a cultural sub-genre of science fiction taking place in a not-so-distant, dystopian, over-industrialized society. The term grew out of the work of William Gibson and Bruce Sterling and has evolved into a cultural label encompassing many different kinds of human, machine, and punk attitudes. It includes clothing and lifestyle choices as well. See Also: Cyberspace

Cyberspace -- Term originated by author William Gibson in his novel Neuromancer. The word Cyberspace is currently used to describe the whole range of information resources available through computer networks.

Data Encryption Standard (DES) -- An algorithm or block cipher that uses a 56-bit key and operates a block of 64 bits. Created by IBM and endorsed by the U.S. government in 1977, DES is relatively fast and often used to encrypt large amounts of data at one time. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Digerati -- The digital version of literati, it is a reference to a vague cloud of people seen to be knowledgeable, hip, or otherwise in-the-know in regards to the digital revolution.

Digital certificate -- An electronic document, issued by a certificate authority, used to establish a company's identity. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

DSL (Digital Subscriber Line) -- A method for moving data over regular telephone lines. A DSL circuit is much faster than a regular phone connection, and the wires coming into the subscriber's premises are the same (copper) wires used for regular phone service. A DSL circuit must be configured to connect two specific locations, similar to a leased line. A commonly discussed configuration of DSL allows downloads at speeds of up to 1.544 megabits (not megabytes) per second, and uploads at speeds of 128 kilobits per second. This arrangement is called ADSL: "Asymmetric" Digital Subscriber Line. Another common configuration is symmetrical: 384 Kilobits per second in both directions. In theory ADSL allows download speeds of up to 9 megabits per second and upload speeds of up to 640 kilobits per second. DSL is now a popular alternative to Leased Lines and ISDN, being faster than ISDN and less costly than traditional Leased Lines. See Also: bit, bps, ISDN, Leased Line

Domain Name -- The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. A given machine may have more than one Domain Name but a given Domain Name points to only one machine. For example, the domain names matisse.net, mail.matisse.net, and workshop.matisse.net can all refer to the same machine, but each domain name can refer to no more than

one machine. Usually, all of the machines on a given Network will have the same thing as the right-hand portion of their Domain Names (matisse.net in the examples above). It is also possible for a Domain Name to exist but not be connected to an actual machine. This is often done so that a group or business can have an Internet e-mail address without having to establish a real Internet site. In these cases, some real Internet machine must handle the mail on behalf of the listed Domain Name. See Also: IP Number

Electronic Data Interchange (EDI) -- The electronic exchange of business documents between companies' computer applications in a standardized form. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Electronic fund transfer (EFT) -- A system that optimizes the transfer of electronic payments, including remittance information, over secure private networks between banks. Direct deposit of employee paychecks into their bank accounts is one example of the use of EFT. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

E-mail (Electronic Mail) -- Messages, usually text, sent from one person to another via computer. E-mail can also be sent automatically to a large number of addresses (Mailing List). See Also: Listserv®, Maillist

Encryption -- Encoding information to prevent it from being read by unauthorized parties. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Ethernet -- A very common method of networking computers in a LAN. Ethernet will handle about 10,000,000 bits-per-second and can be used with almost any kind of computer. See Also: Bandwidth, LAN

Extranet -- Two or more Intranets connected using TCP/IP; also called shared nets. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

FAQ (Frequently Asked Questions) -- FAQs are documents that list and answer the most common questions on a particular subject. There are hundreds of FAQs on subjects as diverse as Pet Grooming and Cryptography. FAQs are usually written by people who have tired of answering the same question over and over.

FDDI (Fiber Distributed Data Interface) -- A standard for transmitting data on optical fiber cables at a rate of around 100,000,000 bits-per-second (10 times as fast as Ethernet, about twice as fast as T-3). See Also: Bandwidth, Ethernet, T-1, T-3

Finger -- An Internet software tool for locating people on other Internet sites. Finger is also sometimes used to give access to non-personal information, but the most common use is to see if a person has an account at a particular Internet site. Many sites do not allow incoming Finger requests, but many do.

Fire Wall -- A combination of hardware and software that separates a LAN into two or more parts for security purposes. See Also: Network, LAN

Firewall -- A computer that acts as gatekeeper between an internal network's computers and the rest of the Internet. Firewall machines prevent direct connection to the internal computers and instead relay messages and services, thereby providing an extremely high measure of security. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Flame -- Originally, flame meant to carry forth in a passionate manner in the spirit of honorable debate. Flames most often involved the use of flowery language and flaming well was an art form. More recently, flame has come to refer to any kind of derogatory comment no matter how witless or crude. See Also: Flame War

Flame War -- When an online discussion degenerates into a series of personal attacks against the debaters, rather than discussion of their positions. A heated exchange. See Also: Flame

FTP (File Transfer Protocol) -- A very common method of moving files between two Internet sites. FTP is a special way to login to another Internet site for the purposes of retrieving and/or sending files. There are many Internet sites that have established publicly accessible repositories of material that can be obtained using FTP, by logging in using the account name anonymous, thus these sites are called anonymous ftp servers.

Gateway -- The technical meaning is a hardware or software set-up that translates between two dissimilar protocols, for example Prodigy has a gateway that translates between its internal, proprietary e-mail format and Internet e-mail format. Another, sloppier meaning of gateway is to describe any mechanism for providing access to another system, e.g. AOL might be called a gateway to the Internet.

GIF (Graphic Interchange Format) -- A common format for image files, especially suitable for images containing large areas of the same color. GIF format files of simple images are often smaller than the same file would be if stored in JPEG format, but GIF format does not store photographic images as well as JPEG. See Also: JPEG

Gigabyte - 1000 or 1024 Megabytes, depending on whom is measuring. See Also: Byte, Megabyte

Gopher -- A widely successful method of making menus of material available over the Internet. Gopher is a Client and Server style program, which requires that the user have a Gopher Client program. Although Gopher spread rapidly across the globe in only a couple of years, it has been largely supplanted by Hypertext, also known as WWW (World Wide Web). There are still thousands of Gopher Servers on the Internet and we can expect they will remain for a while. See Also: Client, Server, WWW, Hypertext

Hit -- As used in reference to the World Wide Web, "hit" means a single request from a Web browser for a single item from a Web server; thus in order for a Web browser to display a page that contains 3 graphics, 4 "hits" would occur at the server: 1 for the HTML page, and one for each of the 3 graphics. "Hits" are often used as a very rough measure of load on a server, e.g. "Our server has been getting 300,000 hits per month." Because each "hit" can represent anything from a request for a tiny document (or even a request for a missing document) all the way to a request that requires some significant extra processing (such as a complex search request), the actual load on a machine from 1 hit is almost impossible to define.

Home Page (or Homepage) -- Several meanings. Originally, the Web page that your browser is set to use when it starts up. The more common meaning refers to the main Web page for a business, organization, person or simply the main page out of a collection of Web pages, e.g. "Check out so-and-so's new Home Page." Another sloppier use of the term refers to practically any Web page as a "homepage," e.g. "That Web site has 65 homepages and none of them are interesting." See Also: Browser, Web

Host -- Any computer on a network that is a repository for services available to other computers on the network. It is quite common to have one host machine provide several services, such as WWW and USENET. See Also: Node, Network

HTML (HyperText Markup Language) -- The coding language used to create Hypertext documents for use on the World Wide Web. HTML looks a lot like old-fashioned typesetting code, where you surround a block of text with codes that indicate how it should appear, additionally, in HTML you can specify that a block of text, or a word, is linked to another file on the Internet. HTML files are meant to be viewed using a World Wide Web Client Program, such as Netscape or Mosaic. See Also: Client, Server, WWW

HTTP (HyperText Transfer Protocol) -- The protocol for moving hypertext files across the Internet. Requires a HTTP client program on one end, and an HTTP server

program on the other end. HTTP is the most important protocol used in the World Wide Web (WWW). See Also: Client, Server, WWW

Hypertext -- Generally, any text that contains links to other documents - words or phrases in the document that can be chosen by a reader and which cause another document to be retrieved and displayed.

IMHO (In My Humble Opinion) -- A shorthand appended to a comment written in an online forum, IMHO indicates that the writer is aware that they are expressing a debatable view, probably on a subject already under discussion. One of may such shorthands in common use online, especially in discussion forums. See Also: BTW

Internet (Upper case I) -- The vast collection of inter-connected networks that all use the TCP/IP protocols and that evolved from the ARPANET of the late 60's and early 70's. In July 1995, the Internet connected roughly 60,000 independent networks into a vast global Internet. See Also: internet

internet (Lower case i) -- Any time you connect two or more networks together, you have an internet - as in inter-national or inter-state. See Also: Internet, Network

Intranet -- A private network inside a company or organization that uses the same kinds of software that you would find on the public Internet, but that is only for internal use. As the Internet has become more popular, many of the tools used on the Internet are being used in private networks; for example, many companies have Web servers that are available only to employees. Note that an Intranet may not actually be an internet -- it may simply be a network. See Also: Internet, internet, Network

IP Number (Internet Protocol Number) -- Sometimes called a dotted quad. A unique number consisting of 4 parts separated by dots, e.g. 165.113.245.2. Every machine that is on the Internet has a unique IP number - if a machine does not have an IP number, it is not really on the Internet. Most machines also have one or more Domain Names that are easier for people to remember. See Also: Domain Name, Internet, TCP/IP

IRC (Internet Relay Chat) -- A huge multi-user live chat facility. There are a number of major IRC servers around the world that are linked to each other. Anyone can create a channel and anything that anyone types in a given channel is seen by all others in the channel. Private channels can (and are) created for multi-person conference calls.

ISDN (Integrated Services Digital Network) -- A way to move more data over existing regular telephone lines. ISDN is rapidly becoming available to much of the USA and in most markets, it is priced very comparably to standard analog telephone circuits. It can provide speeds of roughly 128,000 bits-per-second over regular telephone lines. In practice, most people will be limited to 56,000 or 64,000 bits-per-second.

ISP (Internet Service Provider) -- An institution that provides access to the Internet in some form, usually for money. See Also: Internet

Java - A network-oriented programming language invented by Sun Microsystems, Inc. specifically designed for writing programs that can be safely downloaded to your computer through the Internet and immediately run without fear of viruses or other harm to your computer or files. Using small Java programs (called "Applets"), Web pages can include functions such as animations, calculators, and other fancy tricks. We can expect to see a huge variety of features added to the Web using Java, since you can write a Java program to do almost anything a regular computer program can do, and then include that Java program in a Web page. See Also: Applet

JDK (Java Development Kit) -- A software development package from Sun Microsystems that implements the basic set of tools needed to write, test and debug Java applications and applets. See Also: Applet, Java

JPEG (Joint Photographic Experts Group) -- JPEG is most commonly mentioned as a format for image files. JPEG format is preferred to the GIF format for photographic images as opposed to line art or simple logo art. See Also: GIF

Key -- A string of digits, which when used with a cryptographic algorithm, produces cipher text. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Kilobyte -- A thousand bytes. Actually 1024 (2^{10}) Bytes. See Also: Byte, Bit

LAN (Local Area Network) -- A computer network limited to the immediate area, usually the same building or floor of a building. See Also: Ethernet

Leased Line -- Refers to a telephone line that is rented for exclusive 24-hour, 7 -days-a-week use from your location to another location. The highest speed data connections require a leased line. See Also: T-1, T-3, DSL

Listserv® -- The most common kind of maillist, "Listserv" is a registered trademark of L-Soft international, Inc. Listservs originated on BITNET but they are now common on the Internet. See Also: BITNET, E-mail, Maillist

Login -- Noun or a verb. Noun: The account name used to gain access to a computer system. Not a secret (contrast with Password). Verb: The act of entering a computer system, e.g. Login to the WELL and then go to the GBN conference. See Also: Password

Maillist (or Mailing List) -- A (usually automated) system that allows people to send e-mail to one address, whereupon their message is copied and sent to all of the other subscribers to the maillist. In this way, people who have many different kinds of e-mail access can participate in discussions together.

Megabyte -- A million bytes. Actually, technically, 1024 kilobytes. See Also: Byte, Bit, Kilobyte

MIME (Multipurpose Internet Mail Extensions) -- The standard for attaching non-text files to standard Internet mail messages. Non-text files include graphics, spreadsheets, formatted word-processor documents, sound files, etc. An email program is said to be MIME Compliant if it can both send and receive files using the MIME standard. When non-text files are sent using the MIME standard they are converted (encoded) into text - although the resulting text is not really readable. Generally speaking the MIME standard is a way of specifying both the type of file being sent (e.g. a QuickTime™ video file), and the method that should be used to turn it back into its original form. Besides email software, the MIME standard is also universally used by Web Servers to identify the files they are sending to Web Clients, in this way new file formats can be accommodated simply by updating the Browsers' list of pairs of MIME-Types and appropriate software for handling each type. See Also: Browser, Client, Server, Binhex, UUENCODE

Mirror -- Generally speaking, "to mirror" is to maintain an exact copy of something. Probably the most common use of the term on the Internet refers to "mirror sites" which are Web sites, or FTP sites that maintain exact copies of material originated at another location, usually in order to provide more widespread access to the resource. Another common use of the term "mirror" refers to an arrangement where information is written to more than one hard disk simultaneously, so that if one disk fails, the computer keeps on working without losing anything. See Also: FTP, Web

Modem (MOdulator, DEModulator) -- A device that you connect to your computer and to a telephone line, that allows the computer to talk to other computers through the telephone system. Modems do for computers what a telephone does for humans.

MOO (Mud, Object Oriented) -- One of several kinds of multi-user role-playing environments, so far only text-based. See Also: MUD, MUSE

----------------------------Instructor Guide-----------------------------

Mosaic -- The first WWW browser that was available for the Macintosh, Windows, and UNIX all with the same interface. Mosaic really started the popularity of the Web. The source-code to Mosaic has been licensed by several companies and there are several other pieces of software as good or better than Mosaic, most notably, Netscape. See Also: Browser, Client, WWW

MUD (Multi-User Dungeon or Dimension) -- A (usually text-based) multi-user simulation environment. Some are purely for fun and flirting, others are used for serious software development, or education purposes and all that lies in between. A significant feature of most MUDs is that users can create things that stay after they leave and which other users can interact with in their absence, thus allowing a world to be built gradually and collectively. See Also: MOO, MUSE

MUSE (Multi-User Simulated Environment) -- One kind of MUD - usually with little or no violence. See Also: MOO, MUD

Netiquette --- The etiquette of the Internet. See Also: Internet

Netizen -- Derived from the term citizen, referring to a citizen of the Internet, or someone who uses networked resources. The term connotes civic responsibility and participation. See Also: Internet

Netscape -- A WWW Browser and the name of a company. The Netscape (tm) browser was originally based on the Mosaic program developed at the National Center for Supercomputing Applications (NCSA). Netscape has grown in features rapidly and is widely recognized as the best and most popular Web browser. Netscape Corporation also produces Web server software. Netscape provided major improvements in speed and interface over other browsers, and has engendered debate by creating new elements for the HTML language used by Web pages -- but the Netscape extensions to HTML are not universally supported. The main author of Netscape, Mark Andreessen, was hired away from the NCSA by Jim Clark, and they founded a company called Mosaic Communications and soon changed the name to Netscape Communications Corporation. See Also: Browser, Mosaic, Server, WWW

Network -- Any time you connect 2 or more computers together so that they can share resources, you have a computer network. Connect 2 or more networks together and you have an internet. See Also: internet, Internet, Intranet

Newsgroup -- The name for discussion groups on USENET. See Also: USENET

NIC (Networked Information Center) -- Generally, any office that handles information for a network. The most famous of these on the Internet is the InterNIC, which is where new domain names are registered. Another definition: NIC also refers to Network Interface Card that plugs into a computer and adapts the network interface to the appropriate standard. ISA, PCI, and PCMCIA cards are all examples of NICs.

NNTP (Network News Transport Protocol) -- The protocol used by client and server software to carry USENET postings back and forth over a TCP/IP network. If you are using any of the more common software such as Netscape, Nuntius, Internet Explorer, etc. to participate in newsgroups then you are benefiting from an NNTP connection. See Also: Newsgroup, TCP/IP, USENET

Node -- Any single computer connected to a network. See Also: Network, Internet, internet

Packet Switching -- The method used to move data around on the Internet. In packet switching, all the data coming out of a machine is broken up into chunks, each chunk has the address of where it came from and where it is going. This enables chunks of data from many different sources to co-mingle on the same lines, and be sorted and directed to different routes by special machines along the way. This way many people can use the same lines at the same time.

Password -- A code used to gain access to a locked system. Good passwords contain letters and non-letters and are not simple combinations such as virtue7. A good password might be: Hot$1-6. See Also: Login

Plug-in -- A (usually small) piece of software that adds features to a larger piece of software. Common examples are plug-ins for the Netscape® browser and Web server. Adobe Photoshop® also uses plug-ins. The idea behind plug-ins is that a small piece of software is loaded into memory by the larger program, adding a new feature, and that users need only install the few plug-ins that they need, out of a much larger pool of possibilities. Plug-ins are usually created by people other than the publishers of the software the plug-in works with.

POP (Point of Presence, also Post Office Protocol) -- Two commonly used meanings: Point of Presence and Post Office Protocol. A Point of Presence usually means a city or location where a network can be connected to, often with dial up telephone lines. So, if an Internet company says they will soon have a POP in Belgrade, it means that they will soon have a local telephone number in Belgrade and/or a place where leased lines can connect to their network. A second meaning, Post Office Protocol refers to the way e-mail software such as Eudora gets mail from a mail server. When you obtain a SLIP, PPP, or shell account you almost always get a POP account with it, and it is this POP account that you tell your e-mail software to use to get your mail. See Also: SLIP, PPP

Port -- 3 meanings. First and most generally, a place where information goes into or out of a computer, or both; e.g., the serial port on a personal computer is where a modem would be connected. On the Internet, port often refers to a number that is part of a URL, appearing after a colon (:) right after the domain name. Every service on an Internet server listens on a particular port number on that server. Most services have standard port numbers; e.g., Web servers normally listen on port 80. Services can also listen on non-standard ports, in which case the port number must be specified in a URL when accessing the server, so you might see a URL of the form: gopher://peg.cwis.uci.edu:7000/ shows a gopher server running on a non-standard port (the standard gopher port is 70). Finally, port also refers to translating a piece of software to bring it from one type of computer system to another, e.g. to translate a Windows program so that is will run on a Macintosh. See Also: Domain Name, Server, URL

Portal -- Usually used as a marketing term to described a Web site that is or is intended to be the first place people see when using the Web. Typically, a "Portal site" has a catalog of Web sites, a search engine, or both. A Portal site may also offer email and other service to entice people to use that site as their main "point of entry" (hence "portal") to the Web.

Posting -- A single message entered into a network communications system; e.g., A single message posted to a newsgroup or message board. See Also: Newsgroup

PPP (Point to Point Protocol) -- Most well known as a protocol that allows a computer to use a regular telephone line and a modem to make TCP/IP connections and thus be really and truly on the Internet. See Also: IP Number, Internet, SLIP, TCP/IP

Protocol -- The rules that determine everything about the way a network operates. Protocols govern how applications access the network, the way data from an application is divided into packets for transmission through a cable, and which electrical signals represent data on a network cable. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

PSTN -- (Public Switched Telephone Network) -- The regular old-fashioned telephone system.

RFC (Request For Comments) -- The name of the result and the process for creating a standard on the Internet. New standards are proposed and published on line, as a

Request for Comments. The Internet Engineering Task Force is a consensus-building body that facilitates discussion, and eventually a new standard is established, but the reference number/name for the standard retains the acronym RFC, e.g. the official standard for e-mail is RFC 822.

Router -- A special-purpose computer (or software package) that handles the connection between 2 or more networks. Routers spend all their time looking at the destination addresses of the packets passing through them and deciding which route to send them on. See Also: Network, Packet Switching

RSA -- This public-key encryption algorithm (named after its designers, Rivest, Shamir, and Adelman of RSA Data Security Inc.) supports a variable key length as well as variable block size of the text to be encrypted. The plain text block must be smaller than the key length. The common key length is 512 bits. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

Security Certificate -- A chunk of information (often stored as a text file) that is used by the SSL protocol to establish a secure connection. Security Certificates contain information about to whom it belongs, to whom it was issued, a unique serial number or other unique identification, valid dates, and an encrypted "fingerprint" that can be used to verify the contents of the certificate. In order for an SSL connection to be created both sides must have a valid Security Certificate. See Also: Certificate Authority, SSL

Server -- A computer, or a software package, that provides a specific kind of service to client software running on other computers. The term can refer to a particular piece of software, such as a WWW server, or to the machine on which the software is running, e.g. Our mail server is down today, that's why e-mail isn't getting out. A single server machine could have several different server software packages running on it, thus providing many different servers to clients on the network. See Also: Client, Network

Secured Electronic Transaction (SET) -- Developed by the MasterCard/VISA consortium, SET is a combination of a protocol designed for use by other applications (such as Web browsers) and a standard for handling credit card transactions over the Internet. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

SLIP (Serial Line Internet Protocol) -- A standard for using a regular telephone line (a serial line) and a modem to connect a computer as a real Internet site. SLIP is gradually being replaced by PPP. See Also: Internet, PPP

SMDS (Switched Multimegabit Data Service) -- A new standard for very high-speed data transfer.

SMTP (Simple Mail Transfer Protocol) -- The main protocol used to send electronic mail on the Internet. SMTP consists of a set of rules for how a program sending mail and a program receiving mail should interact. Almost all Internet email is sent and received by clients and servers using SMTP, thus if one wanted to set up an email server on the Internet one would look for email server software that supports SMTP. See Also: Client, Server

SNMP (Simple Network Management Protocol) -- A set of standards for communication with devices connected to a TCP/IP network. Examples of these devices include routers, hubs, and switches. A device is said to be "SNMP compatible" if it can be monitored and/or controlled using SNMP messages. SNMP messages are known as "PDUs" - Protocol Data Units. Devices that are SNMP compatible contain SNMP "agent" software to receive, send, and act upon SNMP messages. Software for managing devices via SNMP are available for every kind of commonly used computer and are often bundled along with the device they are designed to manage. Some SNMP software is designed to handle a variety of devices. See Also: Network, Router

Spam (or Spamming) -- An inappropriate attempt to use a mailing list, or USENET or other networked communications facility as if it was a broadcast medium (which it is

not) by sending the same message to a large number of people who didn't ask for it. The term probably comes from a famous Monty Python skit that featured the word Spam repeated over and over. The term may also have come from someone's low opinion of the food product with the same name, which is generally perceived as a generic content-free waste of resources. (Spam is a registered trademark of Hormel Corporation for its processed meat product.) E.g. Mary spammed 50 USENET groups by posting the same message to each. See Also: Maillist, USENET

SQL (Structured Query Language) -- A specialized programming language for sending queries to databases. Most industrial-strength and many smaller database applications can be addressed using SQL. Each specific application will have its own version of SQL implementing features unique to that application, but all SQL-capable databases support a common subset of SQL.

SSL (Secure Sockets Layer) -- A protocol designed by Netscape Communications to enable encrypted, authenticated communications across the Internet. SSL used mostly (but not exclusively) in communications between Web browsers and Web servers. URLs that begin with "http" indicate that an SSL connection will be used. SSL provides three important things: Privacy, Authentication, and Message Integrity. In an SSL connection, each side of the connection must have a Security Certificate, which each side's software sends to the other. Each side then encrypts what it sends using information from both its own and the other side's Certificate, ensuring that only the intended recipient can de-crypt it, and that the other side can be sure the data came from the place it claims to have come from, and that the message has not been tampered with. See Also: Browser, Server, Security Certificate, URL

Sysop (System Operator) -- Anyone responsible for the physical operations of a computer system or network resource. A System Administrator decides how often backups and maintenance should be performed and the System Operator performs those tasks.

T-1 -- A leased-line connection capable of carrying data at 1,544,000 bits-per-second. At maximum theoretical capacity, a T-1 line could move a megabyte in less than 10 seconds. That is still not fast enough for full-screen, full-motion video, for which you need at least 10,000,000 bits-per-second. T-1 is the fastest speed commonly used to connect networks to the Internet. See Also: Bandwidth, Bit, Byte, Ethernet, T-3

T-3 -- A leased-line connection capable of carrying data at 44,736,000 bits-per-second. This is more than enough to do full-screen, full-motion video. See Also: Bandwidth, Bit, Byte, Ethernet, T-1

TCP/IP (Transmission Control Protocol/Internet Protocol) -- This is the suite of protocols that defines the Internet. Originally designed for the UNIX operating system, TCP/IP software is now available for every major kind of computer operating system. To be truly on the Internet, your computer must have TCP/IP software. See Also: IP Number, Internet, UNIX

Telnet -- The command and program used to login from one Internet site to another. The telnet command/program gets you to the login: prompt of another host.

Terabyte -- 1000 gigabytes. See Also: Byte, Kilobyte, Megabyte

Terminal -- A device that allows you to send commands to a computer somewhere else. At a minimum, this usually means a keyboard, a display screen, and some simple circuitry. Usually you will use terminal software in a personal computer - the software pretends to be (emulates) a physical terminal and allows you to type commands to a computer somewhere else.

Terminal Server -- A special purpose computer that has places to plug in many modems on one side, and a connection to a LAN or host machine on the other side. Thus the terminal server does the work of answering the calls and passes the connections on to the appropriate node. Most terminal servers can provide PPP or

SLIP services if connected to the Internet. See Also: LAN, Modem, Host, Node, PPP, SLIP

UDP (User Datagram Protocol) -- One of the protocols for data transfer that is part of the TCP/IP suite of protocols. UDP is a "stateless" protocol in that UDP makes no provision for acknowledgement of packets received. See Also: TCP/IP

UNIX -- A computer operating system (the basic software running on a computer, underneath things like word processors and spreadsheets). UNIX is designed to be used by many people at the same time (it is multi-user) and has TCP/IP built-in. It is the most common operating system for servers on the Internet.

URL (Uniform Resource Locator) -- The standard way to give the address of any resource on the Internet that is part of the World Wide Web (WWW). A URL looks like this: http://www.matisse.net/seminars.html or telnet://well.sf.ca.us or news:new.newusers.questions etc. The most common way to use a URL is to enter it into a WWW browser program, such as Netscape, or Lynx. See Also: Browser, WWW

USENET -- A worldwide system of discussion groups, with comments passed among hundreds of thousands of machines. Not all USENET machines are on the Internet, maybe half. USENET is completely decentralized, with over 10,000 discussion areas, called newsgroups. See Also: Newsgroup

UUENCODE (Unix to Unix Encoding) -- A method for converting files from Binary to ASCII (text) so that they can be sent across the Internet via e-mail. See Also: Binhex, MIME

Veronica (Very Easy Rodent Oriented Net-wide Index to Computerized Archives) -- Developed at the University of Nevada, Veronica is a constantly updated database of the names of almost every menu item on thousands of gopher servers. The Veronica database can be searched from most major gopher menus. See Also: Gopher

VPN (Virtual Private Network) -- Usually refers to a network in which some of the parts are connected using the public Internet, but the data sent across the Internet is encrypted, so the entire network is "virtually" private. A typical example would be a company network where there are two offices in different cities. Using the Internet the two offices merge their networks into one network, but encrypt traffic that uses the Internet link. See Also: Internet, Network

WAIS (Wide Area Information Servers) -- A commercial software package that allows the indexing of huge quantities of information, and then making those indices searchable across networks such as the Internet. A prominent feature of WAIS is that the search results are ranked (scored) according to how relevant the hits are, and that subsequent searches can find more stuff like that last batch and thus refine the search process.

WAN (Wide Area Network) -- Any internet or network that covers an area larger than a single building or campus. See Also: Internet, internet, LAN, Network

Web -- See: WWW

Web server -- A software program that manages data at the Web site, controls access to that data, and responds to requests from Web browsers. From http://www.ec.ups.com/ecommerce/cm.cgi/glossary.html.

WWW (World Wide Web) -- Frequently used (incorrectly) when referring to "The Internet," WWW has two major meanings - First, loosely used: the whole constellation of resources that can be accessed using Gopher, FTP, HTTP, telnet, USENET, WAIS and some other tools. Second, the universe of hypertext servers (HTTP servers)

allowing text, graphics, sound files, etc. to be mixed together. See Also: Browser, FTP, Gopher, HTTP, Internet, Telnet, URL, WAIS

Another excellent general Internet glossary is the **Sympatico Glossary of Terms**, created by MediaLinx Interactive, LP and located at http://www.ns.sympatico.ca/help/Glossary/a.html.

The E-Commerce Webopedia, sponsored by Internet.com, is an excellent source for the most up-to-date electronic commerce terms, definitions. Visit this site at http://e-comm.webopedia.com/.